The impact of daycare programs on child nutrition, health and development in developing countries: a systematic review
Overview

- Background
- Objectives
- Theoretical model
- Methods
- Results
- Discussion
Conclusions

- The reviewed studies suggest positive impact on child development
- The evidence on child nutrition and health outcomes is less clear
- More rigorously conducted studies on the impact of daycare programs in low and middle income countries are needed:
  - Variety of settings
  - Clear description of the counterfactual care scenarios
  - Intermediary variables that help explain the pathways of impact need to be measured and taken into account in the analyses
  - Alternative evaluation designs that minimize the risk of selection bias
1. Background

- Women in developing countries face competing demands on their time:
  - Child care, domestic activities, farming, fuel-wood, water, etc.
- Higher unemployment and lower working hours hypothesized to be due to these conflicting demands
- Daycare programs currently under way in several developing countries seek to promote labor force participation through relieving a key constraint, i.e. access to child care
- Zoritch et al.'s (2000) daycare review of US studies:
  - 8 published trials
  - Positive effects on child development and mothers’ interaction with their children
  - Few studies looked at health outcomes
  - Emphasized the urgent need for higher quality studies in this area
- No systematic review of the evidence from studies in low and middle income countries has been conducted
2. Objectives

- Review the impact of daycare on the health, nutrition and development of children under 5 in low and middle income countries:

  *Daycare definition: any type of institutional out-of-home care for children younger than 5 years of age, independent from who provided the daycare (government, private or a combination of both).*

- Use a program impact theory approach to identify the pathways through which daycare may improve child outcomes
3. Theoretical model

Daycare provided

Meals provided to children

Cleanliness, hygiene, exposure to communicable diseases, safety

Educational, psychosocial activities, social interaction

Maternal* employment

HH income and mother's* income control

Child dietary intake

HH food security – HH diet quality and quantity

Child health

Mother's* time

Feeding, health and care practices at home

Child nutritional status

Child development including learning outcomes

Program

Underlying and immediate causes

Outcomes
4. Methods

- Intervention studies
- Post 1980; no language restrictions
- 3 step approach: title, abstract, full text
- Studies excluded based on scope, type and quality
- Databases and other sources:
  - PubMed and EconLit
  - Grey literature: IDEAS, POPLINE, BLDS, LILACS
  - World Bank (including the JOLIS catalog), IFPRI
  - Papers suggested by colleagues and international experts in the field
  - Papers identified through reviewing the reference list of non systematic reviews
  - Forward and backward referencing
4. Methods (cont’d)

- **Search string:**
  - ‘exposure’ terms (representing the daycare programs) AND
  - ‘outcome’ terms (child health OR nutrition OR development) AND
  - ‘subject’ terms (children) AND
  - ‘context’ terms (developing countries)

- **Selected studies:**
  - In depth review; results summarized in tables
  - First step: impact of interest (i.e. nutrition, health and development)
  - Second step: program theory to identify pathways
5. Results: study selection

Primary searches: 12,390 studies

Complementary searches: 536 studies

Title review: 13,190

Abstract review: 73

Full text review: 27

Selected studies: 6

Citation tracking: 265 studies
Full text review: 6 studies

Final selection: 6

13,112 studies excluded (did not meet inclusion criteria)

52 studies excluded (did not meet inclusion criteria in terms of scope, type or quality)

21 studies excluded
Scope: 6; Type: 1; Quality: 12;
Paper not found: 2

6 studies excluded
Scope: 3; Type: 1; Quality: 2
## 5. Results: selected studies

<table>
<thead>
<tr>
<th>Country</th>
<th>Reference</th>
<th>Intervention</th>
<th>Evaluation design and analytic method</th>
<th>Nutrition</th>
<th>Health</th>
<th>Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colombia</td>
<td>Attanasio et al. (2010)</td>
<td>Hogares Comunitarios de Bienestar (HCB). Madres comunitarias provide childcare in their homes.</td>
<td>Tx: current attendance and exposure to HCB (fraction of life spent in HCB) Analyses: IV regression</td>
<td>Yes</td>
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<tr>
<td>Colombia</td>
<td>Bernal et al. (2009)</td>
<td>idem</td>
<td>Tx: 1) a. attendance, b. &lt;1, 2-4, 5-15 and 16+ mo of attendance; 2) months of exposure to the program (≤ 1 mo vs &gt; 1 mo). Analyses: PSM (kernel)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Bolivia</td>
<td>Behrman et al. (2004)</td>
<td>Programa Integral de Desarrollo Infantil (PIDI) Childcare in homes of women in low-income areas</td>
<td>Tx: attendance, cumulative impact (1-6, 7-12, 13-18, 19-24 and 25+ mo), ≤1 mo vs. ≥2 mo Analyses: matching</td>
<td>Yes</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>Guatemala</td>
<td>Ruel et al. (2006)</td>
<td>Hogares Comunitarios (HC) Daycare provided by women in the community</td>
<td>Tx: attending daycare Analyses: matching by design (at the time of subject selection), PSM (nearest neighbor (NN) and kernel)</td>
<td>Yes</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Argentina</td>
<td>Berlinski et al. (2009)</td>
<td>Expansion of public pre-primary school provision (through construction of classrooms) from 93-99.</td>
<td>Tx: supply of pre-primary schools, attending pre-primary school. Analyses: Exogenous increase in pre-primary school availability (construction of 3724 classrooms from 93-99) as Tx variable.</td>
<td>-</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>Uruguay</td>
<td>Berlinski et al. (2008)</td>
<td>Expansion of public pre-primary school classrooms from 1995-2002.</td>
<td>Tx: attended &lt;1 y vs. ≥1 y, ≥2 vs. 1 and 3 vs. 2 y of preschool Analyses: within household estimator, using variability between siblings</td>
<td>-</td>
<td>-</td>
<td>Yes</td>
</tr>
</tbody>
</table>
5. Results: outcomes

- **Nutrition:**
  - Growth: inconsistent (3)
  - Diet: positive (1)

- **Health:**
  - Inconsistent (1)

- **Development:**
  - Large positive effects on measures of child development (4)
5. Results: outcomes (cont’d)

- **Community based**
  - **Columbia**: EDI (Early development instrument) Social, PIPPS (Penn Interactive Peer Play Scale, 1-4), EDI Cognitive, Peabody Picture Vocabulary Test, Woodcock Johnson-Muñoz
    - Impact +2 to +10%, mostly in older children (>36 mo) with longer exposure (>16 mo)
  - **Bolivia**: bulk motor, fine motor, language and auditory, and psycho-social skills
    - Impact +2 to +10%, mostly in older children (>37 mo) with longer exposure (+7 mo)

- **Preschool**
  - **Argentina**: long term effect in 3rd graders of one year of exposure
    - Mathematics and Spanish test scores: 8% increase
    - Positive effect on teachers’ perception of attention (+12pp), effort (+21pp), participation (+16.5pp)
  - **Uruguay**: long term effect of >= one year exposure
    - Attendance: increased from 4.3 pp (7y) to 27.4 pp (15y)
    - Years of schooling: from -0.34 y (7y) to +0.78 y (15y)
5. Results: pathways

- Only 1 study (Guatemala) reported on pathways: improved diet not only due to improvements in daycare but also due to improved intake at home.
6. Discussion

- Limited evidence, all in Latin America

- Key limitations
  - Lack of information on “net treatment”:
    - Net treatment = difference between care in program and care in the absence of the program
  - Lack of information on pathways of impact
    - Not clear whether net effect is always positive
6. Discussion

Daycare provided

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- Key limitations
  - Lack of information on “net treatment”:
    Net treatment = difference between care in program and care in the absence of the program
  - Lack of information on pathways of impact
    Not clear whether net effect is always positive
  - Credible counterfactuals
    - Selection bias is an important challenge
    - RCTs difficult to implement
Conclusions

- The reviewed studies suggest positive impact on child development
- The evidence on child nutrition and health outcomes is less clear
- More rigorously conducted studies on the impact of daycare programs in low and middle income countries are needed:
  - In a variety of settings
  - Provide a clear description of the counterfactual care scenarios
  - Intermediary variables that help explain the pathways of impact need to be measured and taken into account in the analyses.
  - Alternative evaluation designs that minimize the risk of selection bias.
Access to the systematic review

- 3ie Systematic Review 007