Role of Fathers in Birth Outcomes

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New Directions in Birth Outcomes Research

- Integrated Frameworks
- Life course
- Environmental pollutants
- Genetics
- Fathers???
Disparities and Role of Father

- Pervasive and persistent birth outcome disparities in the U.S.
  - Socioeconomic status
    - Current and childhood (intergenerational)
  - Race/ethnicity
    - Black, Native Americans, Asian subgroups
- Paternal risk factors more frequent in these families?
- Mothers more vulnerable to paternal risk factors in these families?
Socioeconomic/Cultural Landscape of Fatherhood

- Transformation of roles and duties assigned to fathers in U.S. society
  - Expansion of role beyond provider
    - Father now recognized as contributing to *economic, social, and emotional* development of family, especially children
Socioeconomic/Cultural Landscape of Fatherhood

- Collapsing industrial employment sector
  - Black and low SES fathers especially affected by these declines.
  - Male unemployment pivotal factor in marriage rates.
Paternal Factors and Birth Outcomes

- Multiple pathways
  - Direct
  - Mediation by maternal factors
  - Moderation by maternal factors
Figure 1. Conceptual framework.
Paternal Factors and Birth Outcomes

- Multiple pathways
  - Direct
    - Carried by the sperm.
      - Effects produced by paternal genetic variation
        - Inherited
        - Spontaneous (e.g., exposure to a toxicant)
    - Until recently was the primary area of research on paternal factors and birth outcomes
      - Hazardous occupational exposures
      - Correlations between paternal and offspring bw
Paternal Factors and Birth Outcomes

- Multiple pathways
  - Mediation and moderation by maternal factors
    - Emerging area of literature
Limitations of Past Research on Paternal Factors

- Focus on direct effects
- Often only consider age, occupation and SES as paternal factors for study.
- Often exclude the complex and often correlated maternal contribution.
- Data often collected by proxy (mother).
Paternal Factor Domains: Empirical and Theoretical

- Social
- Psychosocial
- Biomedical
- Overlap

  - Age is social and biomedical.
Paternal Social Factors and Birth Outcomes

- 1988 NMIHS
  - maternal & *paternal* SES factors separated
  - maternal & *paternal* education were independent and strong predictors of bw

- Studies of child (not birth) outcomes
  - Under-education and under-employment affects ability of fathers to contribute to their child.
Paternal Psychosocial Factors and Birth Outcomes

- Paternal involvement measures
  - Father identified on birth certificate
  - Relationship status and duration
Paternal Psychosocial Factors and Birth Outcomes

- Psychosocial factors from literature
  - Paternal involvement measures
    - Father identified on birth certificate
    - Child given father's surname
    - Relationship
      - Relationship type: romantic; cohabiting
      - Financial and in-kind contribution
      - Duration
    - Attitude toward pregnancy/fatherhood
Paternal Psychosocial Factors and Birth Outcomes

- Father identified on birth certificate
  - Georgia (Guadino et al, 1999)
    - Infant mortality 2x higher if no father identified.
  - U.S. 1995-96 (Phipps et al, 2002)
    - Confirmed higher IMR if no father identified.
Paternal Psychosocial Factors and Birth Outcomes

- Relationship
  - 1995 NSFG (Bird et al, 2000)
    - No effect on LBW associated with type or duration of relationship with baby’s father
    - Married women were more likely to initiate pnc than women in noncohabiting nonmarital relationships.
Paternal Psychosocial Factors and Birth Outcomes

- **Relationship**
  - **Baltimore PTB Study (Straughen, Misra, Caldwell, under review)**
    - 8 item partner support scale ($\alpha=.95$)
    - No differences in pregnancy outcomes or health behaviors by relationship type or when partner support was examined.
    - Partner support was also not associated with health behaviors, including PNC.
Paternal Psychosocial Factors and Birth Outcomes

- Attitude toward pregnancy
  - PRAMS 2000-2003 Oklahoma data
    - When father ambivalent or did not intend pregnancy, maternal smoking much more frequent than when father intended pregnancy.
    - 1st trimester pnc much more likely when father intended pregnancy than when father ambivalent or did not intend pregnancy.
Paternal Psychosocial Factors and Birth Outcomes

- Attitude toward pregnancy
  - Low income prospective cohort (Keely et al 2004)
    - Asked pregnant woman to rate her and her partner’s happiness about pregnancy.
    - Greater reported happiness by the partner in comparison with the mother’s feelings was associated with lower birth weight.
Paternal Psychosocial Factors and Birth Outcomes

- Fragile Families Study
  - Multiple measures of paternal factors
  - Collected data directly from fathers
    - But low recruitment rate so analyses relied on paternal data reported by the mothers.
  - Early childhood focus of study but did collect birth outcomes data.
Paternal Psychosocial Factors and Birth Outcomes

- Fragile Families: Teitler, 2001
  - Seven dimensions paternal involvement.
  - Paternal involvement from all measures associated with improved early pnc.
  - Some paternal involvement measures associated with reductions in maternal smoking and drug use.
  - No effect of paternal involvement on LBW.
    - Did not examine birth weight as continuous.
Paternal Psychosocial Factors and Birth Outcomes

- Fragile Families: Padilla & Reichman, 2001
  - Limited analysis to unmarried sample.
  - LBW risk higher for mothers romantically involved but not cohabiting compared to those cohabiting.
  - Mothers w/little or no romantic relationship with the father and not cohabiting were not at increased LBW risk.
  - Financial/in-kind contributions associated with decreased LBW risk.
Intervention: Prenatal services to adolescent fathers (Barth et al, 1988)

- Fathers' participation in prenatal services associated with:
  - higher birth weight
  - narrowing of racial differences
  - decreased LBW risk
Paternal Psychosocial Factors and Birth Outcomes

- Qualitative study of prenatal care (Milligan et al, 2002)

  “When my girlfriend was pregnant, (she) had to take care of this, take care of that, and she was smoking and drinking, and I was going behind saying that’s the wrong thing to be doing. (In) certain ways I stood behind her (to) make sure she was doing the right things. (She) started going to programs and liking them. (You) must make sure that they make appointments on time and just spend the time... “
Paternal Psychosocial Factors and Birth Outcomes

- Qualitative study of prenatal care (Milligan et al, 2002)
  Quote from male participant:
  “...and the Black male, what we can do, is be the support unit for them, we could be a shoulder for them in a way where we could take them to their appointments if we have the time, or we could be a sounding board for them if they have problems....”
Paternal Psychosocial Factors and Birth Outcomes

- Qualitative study of prenatal care (Milligan et al, 2002)

The father was also sometimes identified as a barrier, with this quote from a mother, “I didn’t go for my prenatal care or nothing. I stayed home, I was lazy, wouldn’t do nothing. My baby’s father sent me through so much stuff, I was like forget it.”
Paternal Biomedical Factors and Birth Outcomes

- Paternal age (independent of mom age)
  - Older paternal age sometimes associated with:
    - Reductions in bw and gestational age.
    - Increased LBW risk.
    - Increased preterm birth risk.
  - Younger age (usually considered social risk factor) associated with higher risk but usually not independent of mom (usually also adolescent).
Paternal Biomedical Factors and Birth Outcomes

- Paternal health status rarely examined.
  - Paternal insulin resistance and diabetes in late adulthood inversely associated with offspring bw. (Wannamethee et al, 2004)
  - Offspring of diabetic fathers have significantly lower bw. (Lindsay et al, 2000; Krishnaveni et al, 2005)
Paternal Biomedical Factors and Birth Outcomes

- Paternal birth weight
  - Most studies have reported associations between paternal and offspring bw.
  - Generally the correlations are weaker than between the mother’s own bw and that of the offspring.
Paternal Biomedical Factors and Birth Outcomes

- Paternal smoking
  - Many ETS studies report associations with bw.
  - Paternal smoking is associated with bw.
  - Paternal behaviors might influence outcomes directly or through maternal behaviors.
    - Studies suggest women are indeed more likely to smoke, drink alcohol, and use drugs if their male partner is engaged in these activities
Paternal Biomedical Factors and Birth Outcomes

Other Paternal Health Behaviors

- Little literature on others such as drugs, alcohol, physical activity.
Implications for Interventions to Improve Birth Outcomes

- Expand services beyond mom.
- Partner with dad when delivering interventions.
  - Family as focus of intervention?
Fathers Matter Pilot Study
Caldwell, Misra & Young

- Funding: UM Interdisciplinary Center on Social Inequalities, Mind and Body, NIH
Specific Aims

1) to describe the general functioning and psychological well-being of fathers.

2) to examine the influences of chronic stress, including economic and racial discrimination, on the quality of relationship between fathers and their pregnant wives/partners.
Specific Aims

3) to assess the direct and indirect links between paternal stress, relationship quality and social support on proximal pregnancy outcomes (e.g., maternal stress).

4) to determine the prenatal service needs of fathers to help them in fulfilling their fathering role responsibilities.
Fathers Matter Study

- Recruit African-American mother-father dyads prior to 26 weeks gestation
  - Included all relationship types
    - Married
    - Cohabiting
    - Romantically involved but not cohabiting
    - Not involved
- Structured interview (both)
- Focus groups (fathers only)
Fathers Matter Study

- Areas of Research
  - Family structure and economics
  - Work status
    - Occupational history
    - Job demand/control scale
  - Social relationships
    - Relationships
    - Social support
Fathers Matter Study

- Areas of Research
  - Relationship with MOB and her mother/
    relationship with FOB and his mother
    - Contact
    - How pregnancy affected relationships
    - MOB/FOB relationships scales
Fathers Matter Study

- Areas of Research
  - Relationship with baby (father)
    - Locus of control specific
    - Expected contact
    - Involvement with pregnancy, including barriers
    - Role of father scale (Palkovitz)
Fathers Matter Study

Areas of Research
- Relationship with respondent’s mother
- Relationship with respondent’s father
Figure 2. Family relationships.
Fathers Matter Study

- Areas of Research
  - Personal characteristics
    - Depressive symptoms scale (CES-D revised)
    - Mastery scale
    - Coping scale
    - Masculinity scale (both men and women)
Fathers Matter Study

Areas of Research

- Health
  - Health
  - Health care access
  - Health Behaviors
Fathers Matter Study

- Areas of Research
  - Religion
  - Racial identity and discrimination
    - Multidimensional inventory of black identity
    - Major experiences of discrimination
Fathers Matter Study

- Areas of Research
  - Service utilization
  - Schooling
Fathers Matter Pilot Study 1

- Ypsilanti Family Medicine prenatal clinic
- Mothers asked to bring the father into the study.
  - 75 mothers interested, 55 eligible
  - 25 father-mother dyads enrolled over 2 y
- Eligible: Black, pregnant, ≥18 yrs old
Fathers Matter Pilot Study 2

- Providence Hospital prenatal clinic
  - Subgroup within the LIFE preterm study
  - Allows for non responders to fathers study.
- Mothers asked to bring the father into the study.
  - 38 eligible pregnant women approached
  - 18 father-mother dyads enrolled over 2 mo
  - 12 refused; 8 no shows
- Eligible: Black, pregnant, ≥18 yrs old
Fathers Matter:
Pilot 1 & 2 Results (n=50)

- Race: Black, per criteria
- Age
  - Mean paternal age 27.8 years
  - Mean maternal age 26.2 years
- Education
  - 67% fathers HS educ, 16% fathers GED
  - 70% mothers HS educ, 11% mothers GED
- Relationship
  - 18% mothers currently married
  - 20% fathers currently married
  - 30% mothers never married
  - 44% fathers never married
Fathers Matter: Pilot 1 & 2 Results (n=50)

- **CES-D (0 – 60)**
  - **Mothers**
    - 54% scored >16
      - Frequent cutoff
    - 24% scored >23
      - Clinical depression?
    - Mean, 17.5 (sd 10.8)
  - **Fathers**
    - 38% scored >16
      - Frequent cutoff
    - 16% scored >23
      - Clinical depression?
    - Mean, 14.6 (sd 9.8)
Fathers Matter: Pilot 1 & 2 Conclusions

- Mothers’ depressive symptoms did not predict fathers’ depressive symptoms,
- These symptoms were not significantly correlated or greater for one partner within the relationship.
- Higher conflict between partners and lower social support was associated with more depressive symptoms for both fathers and mothers.
Fathers Matter

- Suggests that Black fathers may experience high rates of depressive symptoms.
- Unexplored avenue that may be linked to birth outcomes for Black families.
Wayne State University
L.I.F.E. Study

Life 🦋 Influences on Fetal Environments Study

Study Team:
- PI: D Misra (WSU)
- Co-I: C Caldwell (U Mich)
- Co-I: T Osypuk (U Minn)
- Co-I: R Platt (McGill U)
- Data Analyst: L Helmkamp
- Project Manager: R Dailey
- Postdoctoral fellows:
  - J Straughen
  - J Slaughter
  - S Sealy-Jefferson

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Fathers Matter

- Paternal data
  - Proxy reporting by mother (n=1411)
  - Reporting by both mother & father (n=25)

- Next steps
  - Analyze associations with birth outcomes
  - Complete analyses of agreement and associations with birth outcomes.
  - Obtain funding for large scale study!
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