Jamaica’s First Birth Cohort Study and the Policy Impact

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Background

• Low and middle income countries aiming to improve health care are challenged by:
  ▪ Competing technical opinions
  ▪ Multiple demands on the public purse

• Research can provide local evidence to objectively inform health policy and programmes and improve decision-making
Jamaica: Hospitals and Health Centres

Legend

- Hospitals
- Health Centres
- Health Departments

North East
Southern
South East
Western

Health GIS, Health Promotion & Protection Division
Ministry of Health, Jamaica
Perinatal and Infant Mortality: 1965-85

• Under-registration of infant deaths (1981):
  ▪ 33-54%
  ▪ (Desai et al, 1983)

• Perinatal mortality studies (1965-1975)
  ▪ Rate unchanged at 38.8/1000 (Lowry et al, 1976)

• Conflicting opinions re reducing rates:
  ▪ More neonatal special care facilities needed
  ▪ More basic community level public health intervention
The Jamaica Perinatal Morbidity and Mortality Survey (JPMMS): 1986-87

The International Development Research Centre of Canada supported a study to:

• Determine the perinatal mortality rate
• Identify causes of death
• Determine maternal, social and environmental factors predictive of fetal and early infant deaths.

Study team:

• Deanna Ashley, Principal Investigator
• Affette McCaw-Binns, Study Manager, Research Officer
• Karen Foster-Williams (initially ) Paediatric Research Officer
• Maureen Samms-Vaughan, Paediatric Research Officer
Methodology
Jamaica Perinatal Morbidity and Mortality Survey
JPMMS: September 1986- August 1987

National community based survey

1) **Birth cohort** study (September 1 – October 31, 1986)
   - Women delivering in 2 months

2) **Mortality study** (September 1, 1986 – August 31, 1987)
   - Fetal and neonatal deaths >500g
   - Maternal deaths

3) **Health Service Evaluation**
   - Hospital care: observed births on 5 different days during cohort study
   - Primary care: 25% random sample of community midwives
JPMMS Case Finding/Case Ascertainment

• Cohort study (2 months)
  ▪ 10,401 mothers, 10,509 babies (98 pairs of twins)
  ▪ 94% case ascertainment (compared to live births registered)

• Mortality study (1 year)
  ▪ Perinatal mortality rate: 38/1000 births
  ▪ Maternal mortality ratio: 110/100,000 live births
JPMMS: Vital Registration

➢ Vital Registration
   • Registrar General’s Department in poor state of repair
   • Only 9% NNDs, 12% fetal deaths registered
   • 94% live births registered

➢ Policy Response:
   • World Bank/GOJ Social Sector project
     ▪ Modernization of Registrar General’s Department (RGD)
     ▪ Correct deficiencies in birth and death registration
   • Vital Statistics Commission
     ▪ Oversee improvement in quality and completeness of vital registration in Jamaica
JPMMS: Antenatal Care

➢ Community midwives:
  • 94% ordered VDRL tests for syphilis
  • Significant delays in getting test results
    ▪ 25% waited over 2 months for VDRL results
  • Many infants born with congenital syphilis

➢ Policy Response:
  • Trust antigen now used to for on-site screening for syphilis
  • Immediate initiation of treatment for sero-positive women

Source: National HIV/STI Control Programme, Jamaica
Cases of Congenital Syphilis Jamaica 1994-2003

Source: National HIV/STI Control Program, Jamaica
JPMMS: Delivery Care

- **18% of observed deliveries unattended**
  - Poor layout of labour wards
  - Inadequate staffing/overcrowding

- **Overcrowding**
  - Average bed occupancy: 37-93%
    - Highest at Referral [Type B] hospitals (86-93%)
  - 39% of beds at 2 Type B hospitals shared

- **Policy response:**
  - Layout of labour/delivery wards re-designed
  - Bed complement at 3 of 4 Type B hospitals expanded (doubled in some instances)
JPMMS: Maternal Deaths

Mothers with limited access to expert obstetric care 2 times more likely to die from pregnancy complications
  • Risk 6 fold for women with hypertension related deaths

Pilot intervention:
  • Develop and test high-risk antenatal clinics and referral system
  • Focus: pre-eclampsia and eclampsia
    ▪ Leading cause of maternal and perinatal morbidity, mortality
Pilot intervention: Hypertension in Pregnancy

• Findings:
  • 69% ↓ in eclampsia
  • 38% ↓ in hypertension related admissions
  • 54% ↓ in number of in-patient days
    ▪ (McCaw-Binns et al 2004)

• Policy Response:
  • Weekly High Risk clinics now in all parishes
    ▪ Obstetricians visit Type C hospital parishes

Prof. Ian MacGillivray
Pilot Intervention: Hypertension in Pregnancy

- **Parallel study**
  - Educate mothers on danger signs of pregnancy complications (hypertension)

- **Findings:**
  - 60% ↓ in eclampsia
  - (MacGillivray et al 2004)

- **Policy response:**
  - “Act Now” Card integrated into Maternal Health Passport
  - Continuity of care: three pregnancies
(ratio/100 000 live births)

- 1998 - Active maternal mortality surveillance system developed:
  - Maternal deaths = Class I notifiable event
  - All deaths reported on suspicion to Ministry of Health
  - Significant decline in direct obstetric deaths
  - Increase in indirect deaths
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Jamaica Birth Cohort Studies (JBCS) I & II

JBCS I (1,720 children)
- 87.1% expected population

JBCS II (1,565 children)
Background: Child and Adolescent Development and Behaviour

- Violent, aggressive, antisocial behaviour
  - Paralleled by low educational achievement

- Childhood origins
  - What are their determinants?
  - Which factors promote or retard child development and behaviour?

- Follow-up of the 1986 birth cohort at:
  - 11–12 years (1997–99); 15–16 years (2001–03)

- Financial Support:
  - Planning Institute of Jamaica; Ministry of Health
Methodology: Jamaica Birth Cohort Studies (JBCS) I & II

• Children attending schools in Kingston, St Andrew and Portmore, St Catherine
  ▪ Most urban of 14 geo-political divisions

• JBCS I: 1997-98 (11-12 years)

• JBCS II: 2001-02 (15-16 years)

• Cohort children easily identified from school records by their date of birth
  ▪ September 1 – October 31, 1986
Findings
Impact on Policy
JBCS I & II: Parenting

• Parental supervision of children
  ▪ Mothers: 75-80% lived with mothers throughout
  ▪ Fathers: <40% lived with fathers by 15-16 years

• Behavioural associations
  ▪ Children in less stable homes had more problem behaviours, lower cognitive scores and poorer academic achievement

• Policy response:
  ▪ Development of National Parenting Policy
  ▪ Public education parenting messages
Public pre-schools children performed less well academically at primary school than those from private pre-schools, regardless of social status.

Findings led to:

- Minimum standards for pre-schools
- Early Childhood Commission (ECC)
- Early Childhood Act and Regulations (2005)
  - Regulate and manage early childhood institutions under the guidance of the ECC
**JBCS I: Screening and Early Intervention**

*•* Cognitive skills
  - 3% — innumerate; 4% — illiterate
  - Despite being in age appropriate classes

*•* Parent/teacher reports identified few of:
  - 13% of children reporting drug use
  - 12% reporting suicidal thoughts

*•* Policy response:
  **Strategic Framework for Early Childhood Development**
  - Routine screening, early intervention for sensory impairment, behaviour and educational disorders
JBCS I & II: Health and Nutrition

• Undernourished
  ▪ Significant cognitive, academic impairment

• Both BMI extremes
  ▪ Greater behavioural problems than peers

• Recommendation:
  ▪ Early identification of nutritional disorders
  ▪ Revitalisation of school health programme, starting at pre-school

*Girls significantly different than boys
JBCS I & II: Social Activities

Most common (16 years):
• TV viewing and listening to music (95-96%)

Least common (16 years):
• Playing active sports (43%)

>20 hours of TV/week (12 years):
• Impaired cognitive function, behavioural problems
• Poorer academic performance

Policy Response:
• Recommend limited TV viewing for children
• Children’s TV programming code (2003)
  ▪ Broadcasting Commission, Jamaica
Girls out-perform boys

- Reading, spelling, arithmetic
- Boys disengage from protective factors over time
  - Organized activities, church,
  - Leisure reading
  - Boys: 12 yrs: 63%; 16 yrs: 46%
  - Girls: 12 yrs: 82%; 16 yrs: 74%

**Policy recommendations:**
- Change teacher training curricula
- Develop parenting programmes to recognize/address developmental differences of boys and girls
- Boys exposed to more corporal punishment at school
Delinquency, Aggression and School Performance: 11-12 yrs

➢ Delinquency and aggression
  • Impaired family functioning
  • Poor academic achievement (literacy, numeracy)
  • Frequent change of mother figure
  • Risky behaviour
    ▪ Drug use, suicidal ideation, carrying a weapon

➢ Problem behaviour
  • Poor academic achievement

➢ Poor and inadequate basic school and primary school environments associated with greater aggression and delinquency
Violence

Policy Response

- Inclusion of violence prevention in the National Policy and Strategic Plan for the Promotion of Healthy Lifestyles
  - Build self esteem
  - Integrate organized after school activities, literacy improvement and positive parenting
  - Special emphasis on boys

- Data included in UN Secretary General’s Study on Violence against Children
Discussion

Lessons Learnt

Next Steps
Maternal Health

Comprehensive Reproductive Health Programme

• Re-opening of the schools of midwifery
• Deployment of additional obstetricians
• In service education
• Development of improved quality of care systems
  ▪ Standardization of record keeping
  ▪ Treatment protocols
Gender

• Findings highlight the plight of boys
  ▪ Data suggest that the academic environment does not promote academic achievement of boys and needs further study

• Caribbean very resistant to removal of corporal punishment
  ▪ Advocated for reform in policy, legislation
  ▪ Training in positive disciplinary practices
JBCS III: The Chronic Disease Epidemic

• Epidemiological transmission
  ▪ Chronic non-communicable diseases = leading causes of mortality

• To better understand the social determinants of chronic disease, young adults followed:
  ▪ Epidemiology Research Unit
  ▪ Tropical Medicine Research Institute
  ▪ University of the West Indies

• First adult follow-up: Age 20-21 years
  ▪ 997 young adults evaluated
Ministry of Health/The University of the West Indies Collaboration

Ministry of Health
- Practical experience
- Clear understanding of the problems and challenges
- Access to the health team/facilities
- Relationship with other government institutions
  - Findings inform policy and programme implementation

The University of the West Indies
- Technical and academic acumen
- Links to international research centres
- Up to date investigative strategies
- Postgraduate students needing research experience
- Opportunity to contribute to national development
Academic Development: Perinatal Team

Developed team of UWI researchers
- Continued follow-up 1986 Cohort at age 20 years
- The new Cohort: JA Kids
  - New technology
  - New questions
  - Impact assessment on the early years
- Challenge
  - Financing
  - Inter-Faculty collaboration
  - Opportunity for north-south collaboration
CONCLUSION
Lessons learnt/ Key factors

Study Development
- Well thought out Study design
  - Develop good money hunting skills
    - Networking
    - Collaboration
Dissemination of Findings: Integrating into Policy/Programmes

Keep stakeholders interested

• Ownership of research process
  • Increases odds that recommendations will be converted into policies

• Market findings to important target audiences
  • Oral presentations at professional meetings
  • Political leadership
  • Media
  • Lay public
Dissemination of Findings: Integrating into Policy/Programmes

Behaviour change is a slow process:

• Perseverance and hard work
• Seize opportunities to influence changes supported by the research evidence
• Collaboration
• Good communication and Advocacy
• Patience
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