Lifecourse perspectives on oral health inequalities

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“Steps of life” – Neuruppiner Bilderbogen, Germany 1888
Lifecourse Epidemiology: Definition

“Lifecourse epidemiology is the study of long-term biological, behavioural, and psychosocial processes that link adult health and disease risk to physical or social exposures acting during gestation, childhood, adolescence, adult life, or across generations.”

(Kuh and Ben-Shlomo 1997, 2004: “A lifecourse approach to chronic disease epidemiology”)
Why lifecourse epidemiology?

Developed from three strands of research:

- Biological programming ("Barker hypothesis" – Barker 1986)
- Emerging evidence of risk accumulation from birth cohort studies
- Health inequalities research

(Blane et al. 2007; Richter & Blane 2013; http://www.thebarkertheory.org/index.php)
Why lifecourse epidemiology?

How does the “social” become “biological”? 

“Life course influences are increasingly seen to hold the key to a better understanding of disease aetiology and the existence of social inequalities in health.” (Richter and Blane 2013)
Key concepts

• Critical period models / Sensitive period models

• Accumulation of risk models
  o With independent and uncorrelated insults
  o With correlated insults:
    • Risk clustering
    • Chains of risk

(Kuh et al. 2003)
Application to oral health

Life-course epidemiology: concepts and theoretical models and its relevance to chronic oral conditions


Methods

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Application to oral health: critical periods

- Disturbances occurring during development of enamel may result in visible and immutable defects – critical period model
- Dental fluorosis
- Low birth weight related to enamel defects in primary teeth (syst. review by Jacobsen et al. 2014) – pathway probably via mineral deficiencies
Application to oral health: sensitive periods

Socio-economic disadvantage in childhood linked to higher levels of caries and periodontal disease in adulthood, independent of adult SEP (e.g. Poulton et al. 2002; Thomson et al. 2004; Listl et al. 2014)
Application to oral health: accumulation of risk

Childhood SEP at different time points

TIME

Adult oral health

The Influence of Family Income Trajectories From Birth to Adulthood on Adult Oral Health: Findings From the 1982 Pelotas Birth Cohort

Marco A. Peres, PhD, Karen G. Peres, PhD, W. Murray Thomson, PhD, Jonathan M. Broadbent, PhD, Denise P. Gigante, PhD, and Bernardo L. Horta, MD, PhD
Application to oral health: disease trajectories

Mean percentage of at-risk tooth surfaces affected by caries over time. Caries levels were measured at ages 5, 9, 15, 18, 26 and 32 (Reproduced from Broadbent et al. 2008).

(See also: Broadbent et al. 2013)
A lifecourse framework for oral health

Bringing together concepts of

- Social determinants,
- Common risk factors,
- Lifecourse epidemiology.
Lifecourse approach: Opportunities

- Interdisciplinary – beyond a biomedical model of oral health
- Identification of risk and protective factors at each life stage
- Identification of trajectories of oral diseases and contribution of social determinants, biological and psychosocial factors
- Cross-cohort and cross-country comparisons
- Policy development: identification of intervention points
Lifecourse approach: Challenges

• Longitudinal data needed

• Very few prospective, population-based cohort studies with dental clinical data:
  • Newcastle Thousand Families 1947 birth cohort (England)
  • Dunedin Multidisciplinary Health and Development Study (New Zealand, members born in 1972-1973)
  • 1982, 1993 and 2004 Pelotas birth cohorts (Brazil)

• Alternative: self-reports, including retrospective, data linkage?
Using a lifecourse approach to address oral health inequalities: policy implications

- Think and plan long-term
- Target unequal distribution of wealth, foster social mobility
- Have safety nets in place at important life transitions e.g. illness, unemployment, retirement
- Prevention strategies: target early life, but do not neglect adults and older people
- Interdisciplinary approach of a lifecourse perspective needs to translate into multi-sectoral, multi-strategy approaches to tackling inequalities
Conclusions and outlook

- **Understanding of how the social becomes biological** – “how life gets under the skin” – most likely to come from research using a lifecourse perspective.

- Previous research mainly on associations between childhood socio-economic circumstances and adult oral health – pathways?

- Interrelationships between oral and general health over time?

- Influence of social mobility on oral health trajectories?

- **Need for longitudinal cohort studies to include good-quality oral health data.**
References / further reading


Thank you
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