Determinants of adolescent health
Summary

• The influences on adolescent health
• Distal and proximal influences
• National wealth
• Education
• Family
• Peers
• Neighbours
Outside SSA the main causes of mortality and morbidity is violence, self harm, risky sexual behaviour - which is often related to difficulty in the control of behaviour and emotions.

Distal
National wealth, education, inequalities, conflict

Proximal
Family, peers, school, neighbourhood

Health outcomes for the adolescent
Proximal determinants results from distal determinants, but are also generated through cultural, religious, and community factors.

Pathways from national level income to child mortality

Country resources (GDP pc PPP) and their distribution

Government revenue
Governance/control of corruption
Government efficiency

Household resources: access to food/shelter/education/sanitation/healthcare (including vaccinations) (Indicator 4.3)/water/information resource allocation in home

Child mortality
including under-five mortality rate (Indicator 4.1)
and infant mortality rate (Indicator 4.2)

The pooled estimate of the relationship between income and infant mortality before adjusting for covariates is 0.95 (95% CI 1.34 to 0.57). Under-five mortality is 0.45 (95% CI 0.79 to 0.11).

Since health and health behaviours track strongly from adolescence into adult life, the way these structures of opportunity affect adolescent health are crucial to the health of the whole population and the economic development of nations.

The greatest benefits probably lie in a determined search for interventions that address malleable determinants (ie, social determinants amenable to change), in part through modification of evidence-based existing interventions within resource poor settings.

Health spending and adolescent health

In ecological analyses, we noted that national health spending per person was not associated with any outcomes in adolescent health under study after adjustment for national wealth.

National economic development is highly beneficial for young people, their health is vulnerable to the inequalities generated by development, particularly where rapid economic development and urbanisation create large populations of deprived and displaced youth.

During adolescence, rapid development of the CNS and other biological systems interact with social development to entrain new behaviours and to allow many transitions important for an individual to function as a productive adult.
Studies of natural experiments such as variations in health outcomes between nations provide useful data on the effect of structural determinants on health, although ecological analyses cannot prove causation.

Ecological associations between national wealth and inequality and various health outcomes in adolescence
Distal

National wealth
education, inequalities, conflict

Proximal

Family, peers, school, neighbourhood

Health outcomes for the adolescent
Figure 1: Associations of national wealth with adolescent health outcomes by country

Data show associations across countries of log GDP with log of each adolescent health outcome, adjusted for log of country population. Sample sizes (N) show number of countries with data on both GDP and the outcome under study. Associations are expressed as β coefficients on the x-axis, which represent the change in each health outcome for a 1 SD increase in GDP. Positive associations suggest greater level of each health problem, and negative associations represent fewer problems. We show only significant associations at the p<0.05 level, with all data shown in the table. We defined smoking as any tobacco in the past 30 days, bullying as being bullied one or more times per day in the past few months, violence as involving in one or more fights in the past 12 months, injuries as one or more substantial injuries in the past 12 months, teenage births as births per 1000 women aged 15–19 years, HIV prevalence as percentage aged 15–24 years who are HIV positive, and mortality as deaths per 100 000 person years of observation. We list our data sources in the appendix. GDP=gross domestic product.
Distal
National wealth
*education*, inequalities, conflict

Proximal
Family, peers, school, neighbourhood

Health outcomes for the adolescent
**Figure 4: Associations of access to education and adolescent health outcomes by country**

Data show associations across countries of log of proportion of adolescents participating in secondary education with log of each adolescent health outcome by country, adjusted for log of country population. Sample sizes (N) show number of countries with data on both education participation and the outcome under study. Associations are expressed as β coefficients on the x-axis, which represent the change in each health outcome for a 1 SD increase in education participation. Positive associations suggest greater level of each health problem, and negative associations represent fewer problems. We show only significant associations at the p<0.05 level, with all data shown in the table. We defined smoking as any tobacco in the past 30 days, bullying as being bullied one or more times per day in the past few months, violence as involving in one or more fights in the past 12 months, injuries as one or more substantial injuries in the past 12 months, teenage births as births per 1000 women aged 15–19 years, HIV prevalence as percentage aged 15–24 years who are HIV positive, and mortality as deaths per 100 000 person years of observation. We list our data sources in the appendix.
• Higher education participation was also associated with lower HIV prevalence, and lower injury levels in both sexes, and fewer teenage births.

• Educational participation remains an important structural determinant after early childhood, protective against many new problems in adolescence, including health behaviours, teenage pregnancy, and injury deaths.

<table>
<thead>
<tr>
<th>Sub-Saharan Africa, east</th>
<th>Men</th>
<th>Women</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burundi</td>
<td>2.2 (2.0–2.3)</td>
<td>3.5 (3.3–3.7)</td>
<td>0.3 (0.2–0.3)</td>
<td>0.9 (0.8–0.9)</td>
</tr>
<tr>
<td>Comoros</td>
<td>2.1 (2.0–2.2)</td>
<td>4.1 (3.9–4.3)</td>
<td>0.2 (0.2–0.3)</td>
<td>0.8 (0.8–0.9)</td>
</tr>
<tr>
<td>Djibouti</td>
<td>3.2 (3.0–3.4)</td>
<td>5.3 (5.1–5.5)</td>
<td>0.2 (0.2–0.3)</td>
<td>0.7 (0.6–0.7)</td>
</tr>
<tr>
<td>Eritrea</td>
<td>1.9 (1.8–2.0)</td>
<td>3.9 (3.7–4.2)</td>
<td>0.2 (0.1–0.2)</td>
<td>0.7 (0.6–0.7)</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>1.1 (1.0–1.3)</td>
<td>2.3 (2.1–2.4)</td>
<td>0.1 (0.1–0.1)</td>
<td>0.3 (0.3–0.3)</td>
</tr>
<tr>
<td>Kenya</td>
<td>5.0 (4.8–5.1)</td>
<td>7.6 (7.3–8.0)</td>
<td>0.8 (0.7–0.8)</td>
<td>2.6 (2.5–2.7)</td>
</tr>
<tr>
<td>Madagascar</td>
<td>3.2 (3.0–3.4)</td>
<td>5.4 (5.0–5.7)</td>
<td>0.8 (0.7–1.0)</td>
<td>2.2 (2.0–2.3)</td>
</tr>
<tr>
<td>Malawi</td>
<td>3.7 (3.6–3.9)</td>
<td>5.8 (5.5–6.0)</td>
<td>0.6 (0.5–0.6)</td>
<td>1.6 (1.5–1.7)</td>
</tr>
<tr>
<td>Mozambique</td>
<td>2.2 (2.0–2.3)</td>
<td>3.6 (3.4–3.9)</td>
<td>0.2 (0.2–0.3)</td>
<td>0.7 (0.6–0.8)</td>
</tr>
<tr>
<td>Rwanda</td>
<td>2.6 (2.4–2.7)</td>
<td>4.1 (3.9–4.4)</td>
<td>0.4 (0.3–0.4)</td>
<td>1.2 (1.1–1.3)</td>
</tr>
<tr>
<td>Somalia</td>
<td>1.7 (1.5–1.8)</td>
<td>2.8 (2.6–2.9)</td>
<td>0.1 (0.1–0.2)</td>
<td>0.4 (0.3–0.4)</td>
</tr>
<tr>
<td>Sudan</td>
<td>3.3 (3.2–3.4)</td>
<td>5.6 (5.4–5.8)</td>
<td>0.3 (0.3–0.4)</td>
<td>1.2 (1.1–1.2)</td>
</tr>
<tr>
<td>Tanzania</td>
<td>3.8 (3.7–4.0)</td>
<td>5.7 (5.5–5.9)</td>
<td>0.6 (0.5–0.7)</td>
<td>1.9 (1.8–2.0)</td>
</tr>
<tr>
<td>Uganda</td>
<td>4.1 (4.0–4.3)</td>
<td>6.1 (5.9–6.4)</td>
<td>0.7 (0.6–0.8)</td>
<td>1.8 (1.7–1.9)</td>
</tr>
<tr>
<td>Zambia</td>
<td>5.3 (5.1–5.5)</td>
<td>7.5 (7.2–7.8)</td>
<td>1.1 (1.0–1.3)</td>
<td>2.8 (2.6–2.9)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Standard error</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income per person (international $)</td>
<td>-0.121</td>
<td>0.011</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Education of reproductive-age women</td>
<td>-0.100</td>
<td>0.007</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>HIV prevalence (3-year lag)</td>
<td>1.849</td>
<td>0.128</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.021</td>
<td>0.001</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

*Table 3: Coefficients from first-differences model for the effect of income per person, education of women of reproductive age (15–44 years), and HIV prevalence on child mortality between 1970 and 2009*
Proximal determinants

Family, neighbourhood, peers
**Distal**
National wealth
education, inequalities, conflict

---

**Proximal**
Family, peers, school, neighbourhood

---

Health outcomes for the adolescent
Family

Although the primacy of the family as the source of environmental influence lessens, family connectedness is crucial.

Parents’ behaviour – role modelling

The need to earn income, together with poor parental health relating to inequality and deprivation, might limit parents’ ability to support and protect young people, including less positive communication, less proactive parenting, and less monitoring of behaviour.
Family

It is important to recognise that young people’s access to, adoption of, and persistence with health behaviours is highly constrained by national political, economic, social, and cultural contexts.

The strong association of deprivation with unhealthy lifestyles in adults limits the ability of poorer families to model healthy lifestyle choices to young people.
Neighbourhoods

In low-income countries, overall child health outcomes are better in urban than rural populations.

However, rapid urbanisation has resulted in an explosion of poor urban settings that now house half the world’s population including particularly large numbers of adolescents. Young people in these settings face severe health risks due to the lack of public infrastructure, poor housing, crowding, and high levels of violence.

Today’s young people are growing up in contexts of globalisation, and increased access to worldwide information
Peer factors can increase or decrease risk.

Peer participation in behaviours likely to increase risk of smoking initiation and persistence, alcohol initiation and use, sexual risk, and violence.
Summary

• The influences on adolescent health
• Distal and proximal influences
• National wealth
• Education
• Family
• Peers
• Neighbours
Distal
National wealth, education, inequalities, conflict

Proximal
Family, peers, school, neighbourhood

Health outcomes for the adolescent