



Child and Youth Health Inequalities in Australia

The status of Australian research 2003

Paper prepared for the Health Inequalities Research Collaboration

Children, Youth and Families Network

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Dr Jan Nicholson,

Julie-Anne Carroll,

Alison Brodie,

Centre for Health Research
School of Public Health
Queensland University of Technology

Associate Professor Elizabeth Waters,

Centre for Community Child Health
University of Melbourne
Murdoch Children's Research Institute

and

Professor Graham Vimpani

Department of Paediatrics and Child Health
The University of Newcastle

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Executive Summary

This report was prepared for the Children, Youth and Families Network to provide an overview of the current status of health inequalities research in Australia as it pertains to children and young people. Specifically, the report aims to:

1. provide an overview of the extent of health inequalities amongst children and young people in Australia;
2. examine contemporary theories of health inequalities to provide an understanding of the relationships between socio-economic circumstances and health;
3. summarise current health inequalities research in relation to Australian children and youth in order to identify strengths and gaps; and
4. provide an overview of some recent national policies and initiatives that may contribute to strengthening Australia's future capacity for addressing child and youth health inequalities.

The Extent of Health Inequalities in Childhood and Adolescence

As shown in Section 2, in Australia today, up to 25% of all Australian children and young people (and up to 59% of those living in lone parent families) experience social and economic circumstances that place them at risk of poor health. The impact of these socio-economic inequalities on the health Australian children and young people is clearly illustrated by mortality data. Disadvantaged life circumstances as measured by area-level socio-economic status are associated with a one- to three-fold increased risk of early life mortality. Indigenous ethnicity and geographical remoteness are associated with a two- to four-fold increase risk of early mortality. While the mortality rate ratios reported varied with age, gender and cause of death, the data confirm that disadvantageous socio-economic circumstances limit life in the early years.

Examination of trends in mortality by area-level disadvantage reveals that early life mortality rates have dropped from the mid-1980s to mid-1990s and these reductions were evident for those from both the least and most disadvantaged groups. For children aged 0-14 years, with one exception (SIDS deaths for males), the absolute differences in number of deaths between the least and most disadvantaged quintiles reduced over time. For females aged 15-24 years, there was also a reduction in absolute differences between the least and most disadvantaged. However for males aged 15-24 years, the absolute differences increased over time. Relative differences in all cause mortality as expressed by rate ratios, indicate that inequalities by area-level disadvantage are persisting.

These data suggest that greater efforts are required if Australia is to provide a healthy start to life for all children and young people. As has been noted elsewhere (e.g. Australian

Government Task Force on Child Development, Health and Wellbeing, 2003; National Public Health Partnership, 2004; Stanley, 2002), the elevated rates of mortality for children and young people of Indigenous origin are a cause for considerable concern, as are the mortality inequalities associated accidental deaths, particularly male suicide, for rural and remote children and young people.

Contemporary Models of the Socio-economic Determinants of Childhood and Adolescent Health

Section 3 presents a number of contemporary models of health and discusses their implications for health inequalities research, practice and policy development. The models presented highlighted the complex nature of socio-economic determinants across the life-course. To adequately reflect this complexity, health inequalities research needs to be designed from a broad, multi-level perspective. Measurement of socio-economic position should be assessed across the individual, family and community levels, and research also needs to consider the timing and duration of exposures to these sources of adversity. The models also highlight the importance of longitudinal research as an essential tool for informing our understanding of the effects of socio-economic inequalities over the life-course

At the policy and practice levels, these models suggest that interventions which address single health determinants at one point in time, are likely to have limited effectiveness. Rather, as a number of commentators have previously noted (e.g. Keating & Hertzman, 1999; McCain & Mustard, 1999; Stanley, 2002), attempts to reduce health inequalities will only be effective through the development of linked-up solutions offered across the life-course, which involve actions across multiple jurisdictions and professional groups in partnership with communities. This requires a fundamental shift in the current structures and practices of the Australian service sectors.

Review of Child and Youth Health Inequalities Research (1998-2003)

Section 4 of the report presents a systematic literature review of recent scientific journal publications to determine the level of health inequalities research that has been conducted with Australian children and youth, and to identify strengths and weaknesses in this research. The review reveals that during the period January 1998 – April 2003, 118 journal publications reported primary research in this area. Comparisons with the publication rates reported in previous reviews (Nicholson et al, 2000; Turrell et al, 1999) suggest that this represents a significant increase in health inequalities research over the last 5 years.

Examination of the types of research conducted reveals an ongoing lack of intervention research. In contrast, a greater proportion of studies were identified that had used longitudinal research methods: 18.3% of all studies involved a longitudinal aspect, with an average follow-up period of around 4 years (although this was highly variable). Thus, it appears that past calls for more longitudinal studies are being heeded. This is particularly encouraging given the barriers to undertaking such research, including the substantial costs of longitudinal designs and the lengthy delays before these studies achieve their maximum productivity (Nicholson &

Rempel, 2004).

The review reveals that while there were variations according to the health outcomes of interest, the majority of the research confirmed the adverse impact of socially and economically disadvantaged circumstances on the health of Australian children and young people. We examined the nature of the type of research that had been undertaken in a number of ways, to assess its breadth and comprehensiveness. This revealed that health inequalities research has been conducted across all developmental stages between conception and age 18 years, spanning a wide range of SEP indicators and health outcomes. Compared to other age groups, the pregnancy (conception to birth) and preschool (age 2 up to 5 years) periods were less frequently the focus of research. Unfortunately, the research examined predominantly involved simple measurement approaches, with a minority of studies using multiple indicators of SEP, and very few involving multi-level measurement. In our subsequent examination of the nature of the relationship between different indicators of SEP and health, we found considerable variability by indicator. These results further reinforce the need for future research to adopt a multi-indicator approach to avoid making potentially misleading conclusions about the presence or absence of health differentials.

The breadth of health outcomes investigated in these studies was examined and there was evidence of research being conducted across all seven of the major health domains considered: mortality; birth outcomes and development; general physical health; cardiovascular health; health behaviours; psychosocial health; and use of health services. However, several health outcomes were identified for which further research attention appears warranted. These included respiratory illnesses, hearing problems, diet and physical activity. In contrast to our earlier review (Nicholson et al, 2000), the findings of the current study did not support the conclusion that psychosocial health inequalities were relatively under-researched. But within this domain, the area of socio-economic inequalities and child abuse and neglect remained under-researched, despite increasing policy attention and public concern regarding this issue.

Developments in Child and Youth Health Research and Policy

The final section of this report, presents information on a selection of national initiatives that may impact on future child and youth health inequalities at the research, policy or practice level. This discussion illustrates the growing attention that is being paid to both child and youth health and issues of health inequalities, with initiatives spanning the research and policy/practice spheres of activity.

Most exciting is the explicit multi-disciplinary focus of the initiatives and their attention to what may be regarded as relatively unattractive or non-prestigious work. For example, in the research area, several of the groups are aiming to build resources and capacity through such things as measurement validation work, development of measurements libraries, data linkage feasibility studies, secondary analyses of national datasets and warehousing of data and research findings. These time and resource intensive activities deserve ongoing funding support due to their acknowledged potential for enhancing the quality of Australian research in these important areas.

As argued by Professor Fiona Stanley, the pathways to better population health and social justice lie in multi-disciplinary research and policy partnerships which will allow us to

“investigate the social and ecological contexts in which causal pathways arise, develop better measures and analytical methodologies, ... expand and link large population databases to better serve a causal pathways approach, and plan longitudinal studies carefully to enable multiple and interacting pathways to be studied.” (2002, pp.42-43).

Several of these goals are now starting to be addressed, and while it is still early days for a number of the initiatives that were described, it appears that we will be much better positioned in the future to develop evidence-based policies and practices to enhance the health and wellbeing of children and youth.

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1. Introduction

1.1 The Health Inequalities Research Collaboration

The Health Inequalities Research Collaboration (HIRC) was established by the Australian Government Department of Health and Ageing with the goal of “*enhancing Australia’s knowledge on the causes of and effective responses to health inequalities, and to promote vigorously, the application of this evidence to reduce health inequalities in Australia*” by:

1. increasing the national focus on reducing health inequalities;
2. building national capacity and support for research and development in health inequalities;
3. establishing close collaboration among researchers, practitioners and policy developers; and
4. promoting the uptake of research findings in policy, practice and evaluation.

In 2002 HIRC allocated two-year funding for the establishment of three research networks in the areas of: children, youth and families; primary health care; and sustainable communities. The convenors of each network were to: establish and maintain a comprehensive and viable research network; provide expert advice on issues related to health inequalities; facilitate communication and collaboration between network members and other individuals and groups; and undertake activities to build capacity in health inequalities research.

1.2 Aims

This report was prepared for the Children, Youth and Families Network to provide an overview of the current status of health inequalities research in Australia as it pertains to children and young people. Specifically, the report aims to:

5. provide an overview of the extent of health inequalities amongst children and young people in Australia;
6. examine contemporary theories of health inequalities to provide an understanding of the relationships between socio-economic circumstances and health;
7. summarise current health inequalities research in relation to Australian children and youth in order to identify strengths and gaps; and
8. provide an overview of some recent national policies and initiatives that may strengthen Australia’s future capacity for addressing child and youth health inequalities.

1.3 Structure of the Report

The report is presented in five sections.

1. The Extent of Health Inequalities in Childhood and Adolescence: provides an overview of health inequalities as they affect children and youth in Australia. National data are presented pertaining to the proportions of children and young people who are exposed to disadvantaged circumstances, and the association between socio-economic factors and health (using mortality data as an example).

2. Contemporary Models of the Socio-economic Determinants of Childhood and Adolescent Health: describes socio-ecological and life-course approaches to understanding the determinants of health and the implications of these approaches for research and practice in the area of child and youth health inequalities.

3. Systematic Literature Review: provides an analysis of the current status of published Australian research assessing socio-economic factors and health outcomes across childhood and adolescence. The review summarises the study designs employed, the ages at which associations are examined, the range of socio-economic factors and health outcomes analysed, and the extent to which the data provide additional evidence confirming the adverse impact of inequalities on the health of children and youth.

4. Developments in Australian Child and Youth Health Research and Policy: discusses a number of recent national policy and capacity-building initiatives that have the potential to improve knowledge on health inequalities, and to promote the application of this evidence to reduce health inequalities for Australian children and youth.

5. Summary and Conclusions: discusses the progress evident in the last five years in addressing priority areas for research and capacity-building to reduce health inequalities across childhood and adolescence.

2. The Extent of Health Inequalities in Childhood and Adolescence

2.1 Socio-economic Disadvantage in Australia

Health has been defined as “a state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity” (WHO/UNICEF, 1978). Thus, health outcomes research encompasses not only morbidity and mortality related to physical disease states, but also the social and psychological domains of functioning and wellbeing. In relation to children and youth, good health is both the absence of health problems and the achievement of optimal development relative to individual capacity (Raphael, 2000). Keating and Hertzman (1999) have used the term ‘*developmental health*’ to highlight the notion that health outcomes vary across the lifecourse in response to developmental stages. Thus, child and adolescent health may be assessed using a broad range of outcomes including such things as:

- mortality;
- birth and developmental outcomes;
- physical health (e.g. specific chronic or acute illnesses, oral health, hearing and vision, injury, obesity);
- adverse or protective health behaviours (e.g. physical activity, sun protection, smoking, alcohol and drug use); and
- behavioural, emotional, cognitive and social health outcomes (e.g. behavioural and emotional problems, suicide, social skills, cognitive skills, academic competence).

Outcomes across these domains may share common determinants and developmental pathways (Durlack, 1998; Fergusson, Horwood & Lynskey, 1994; Rutter, 2000).

It has long been recognised that health outcomes are not distributed equally. Individuals occupy different positions within society that determine their likelihood of experiencing negative influences such as discrimination, social exclusion, health damaging exposures, or restricted opportunities for accessing health-enhancing resources (Luthar, 1999; Lynch & Kaplan, 2000). Key social and structural factors that may limit health include socio-economic position, ethnicity, and area of residence (Luthar, 1999). Each of these factors and their association with health outcomes for children and young people are discussed later in this report.

Socio-economic position (*SEP*) refers to the “social and economic factors that influence what position(s) individuals and groups hold within the structure of society” (Lynch & Kaplan, 2000, p.14). An array of terms has been used to refer to this construct, including socio-economic status, class, and social stratification, which largely reflect different disciplinary backgrounds including sociology, demography, epidemiology, and criminology. Traditionally, SEP has been measured by income, educational attainment or occupation (Berkman & Macintyre, 1997). These indicators reflect different theories about the mechanisms by which SEP influences health:

- *income* reflects the impact of material factors on health – i.e. that increasing income provides better opportunities for purchasing resources that can promote and protect health, including healthy foods, housing in safe neighbourhoods and access to better health and preventive health services;
- *educational attainment* reflects the impact of better knowledge, access to information and ability to use that information to develop a healthy lifestyle – i.e. that increasing education and cognitive abilities enable a better appreciation and ability to work towards healthy lifestyles such as a good diet, physical activity and lower rates of substance use; and
- *occupation* reflects the psychosocial influences on health that are associated with better employment and the greater opportunities this provides for reducing adverse health exposures and stressors, including workplace exposures (Berkman & Macintyre, 1997).

For children and young people, SEP is typically assessed using indicators of parental or family socio-economic circumstances. These may include measures of family income, or parental occupational status. When considered in terms of resource availability, other indicators of socio-economic circumstances may include such things as housing conditions, residential location, family type and ethnic status.

It is difficult to obtain clear estimates of the proportion of children and young people in Australia whose health may be at risk due to exposure to adverse socio-economic circumstances. Estimates vary considerably according to the indicator of disadvantage employed and the population group considered. Table 2.1 summarises data from recent Australian surveys that provide an indication of the proportion of children and young people experiencing disadvantage.

As shown in the table, around a quarter of Australian children (0-17 years) currently live in families where the family income falls within the lowest quartile for all families and nearly one in five children (0-14yrs) live in families where no parent is employed. In 1995, approximately 8% of children lived in households where financial difficulties affected the purchase of food for the family. Between 0.5% and 1.4% of young people live in circumstances where they do not have access to safe or permanent accommodation.

Adverse socio-economic circumstances cluster within certain family types, ethnic groups and geographical areas. Thirty per cent of Australia's children and young people are currently living in lone parent families, 2-4% live in remote geographical areas that are typically under-resourced, 3-4% are of Indigenous ethnicity and a further 16% are raised in homes where English is not the main language spoken. For these children, exposure to socio-economic disadvantage is more marked. For example, compared to children living in two-parent families, children in lone parent families are more likely to be in the low income quintile (37% vs. 18%), to live in a household where the main source of income is from government benefits (59% vs. 11%) and to live in overcrowded conditions (11% vs. 6%).

Table 2.1: Proportion of Australian children and young people exposed to disadvantaged circumstances, by indicators of disadvantage.

Indicator	Population examined	Year of data collection	Proportion (%)*
Income			
Low income	Of <u>all children</u> aged 0-17yrs living in a family, those living in a family with equivalent income (adjusted for tax, family size and composition) in the lowest population quintile	1999-2000 ^A	25.2
	Of <u>all couple families</u> with dependent children (0-17yrs), those with equivalent income in the lowest population quintile	1999-2000 ^A	17.8
	Of <u>all lone parent families</u> with dependent children (0-17yrs), those with equivalent income in lowest population quintile	1999-2000 ^A	37.2
Benefits	Of <u>all couple families</u> with dependent children, those whose main source of income is government benefits	1998 ^B	10.9
	Of <u>all lone parent families</u> with dependent children, those whose main source of income is government benefits	1998 ^B	59.1
Food insecurity	Of <u>all households with children</u> 0-14yr, those who had run out of food and had no money to buy more, at least once in previous 12 months	1995 ^A	8
Employment Status			
Parental	Of <u>all families</u> with children 0-14yrs, those with no parent employed	2002 ^B	17.9
	Of <u>all couple families</u> with children 0-14yrs, those with no parent employed	2002 ^B	7.2
	Of <u>all lone parent families</u> with children 0-14yrs, those with no parent employed	2002 ^B	53.8
Young person	Of <u>all young people aged 15-19yrs</u> , those who are unemployed and seeking full-time work	2002 ^B	5.2
	Of <u>all young people aged 20-24yrs</u> , those who are unemployed and seeking full-time work	2002 ^B	6.6
Family Type			
	Of <u>all children</u> 0-14yrs, those who live in a lone parent family	2002 ^B	30.5

... continued over

Indicator	Population examined	Year of data collection	Proportion (%)*
Ethnic Background			
Indigenous	Of <u>all children</u> 0-14yrs, those who are Indigenous	2000 ^A	4.2
	Of <u>all young people</u> 15-24yrs, those who are Indigenous	2001 ^C	3.2
Non-English speaking	Of <u>all young people</u> 12-24yrs, those where main language spoken at home is other than English	2001 ^C	16
Geographical Location			
Remoteness	Of <u>all children</u> 0-14yrs, those who live in remote areas (Rural, Remote and Metropolitan Areas classification)	2000 ^A	3.7
	Of <u>all young people</u> 15-24yrs, who live in remote or very remote Australia (Australian Standard Geographic Classification)	2001 ^C	2.5
Housing Conditions			
Over crowding	Of <u>all couple households with dependent children</u> , those with insufficient bedrooms	2001 ^B	5.8
	Of <u>all lone parent households with dependent children</u> , those with insufficient bedrooms	2001 ^B	10.8
	Of <u>all young people 15-24yrs living in households</u> , those perceived to have inadequate bedrooms	2001 ^C	10
Insecure housing	Of <u>all young people</u> 12-24yrs, those living in accommodation (caravans, cabins, tents etc)	2001 ^C	<5
	Of <u>all young people</u> 12-24yrs, those seeking supported accommodation assistance, alone or with parent/s	2001-2002 ^C	1.0
	Of <u>all young people</u> 12-18yrs, those without temporary or permanent access to safe, secure and stable housing	2001 ^C	approx. 1.4

* Reported to one decimal place where possible. Some sources only reported whole numbers.

^A Australian Institute of Health and Welfare (2002). *Australia's Health 2002*. Canberra: AIHW.

^B Australian Bureau of Statistics (2003). *Australian Social Trends 2003*, Catalogue No. 4102.2. Canberra: ABS.

^C Australian Institute of Health and Welfare (2003). *Australia's Young People, 2003*. Canberra: AIHW.

In addition to the family and personal circumstances, children and young people's health may be influenced by the opportunities and resources available through their immediate neighbourhoods or communities. Neighbourhood characteristics that impact on health include such things as access to safe playgrounds and recreational facilities, levels of neighbourhood crime, traffic safety, easy access to affordable, quality health-care, and the availability of healthy foods at local shops.

The socio-economic circumstances of these broader contexts may be reflected in area-level measures that classify communities or neighbourhoods on a continuum from most to least socio-economically disadvantaged. However, typically area-level measures are derived from household census data (e.g. median household income, proportion of households with no adult employed, and proportion of single parent households) rather than measuring community resources and characteristics. Area-level effects are believed to make a unique contribution to health outcomes that are distinct from individual and family circumstances. These measures are sometimes used as a proxy for individual indicators in research where the collection of individual indicators is precluded, and this may be problematic. In particular, area-level measures are likely to provide an under-estimate of the true association between individual socio-economic circumstances and health (Hyndman et al., 1995).

Past research into the health effects of socio-economic factors shows a fairly consistent picture:

- health outcomes are generally worse for children and young people who experience socially and economically disadvantaged circumstances;
- these associations are evident across a broad range of indicators of disadvantage and health;
- typically a gradient effect is evident, with health outcomes worsening incrementally with increasing levels of disadvantage; and
- for some health problems, the differences in health outcomes between least and most disadvantaged are widening (Draper, Turrell & Oldenburg, 2004; Stanley, 2002; Turrell & Mathers, 2000; Turrell & Mengersen, 2000).

The following section illustrates these trends using national mortality data for Australian children and young people.

2.2 Inequalities in Mortality Rates for Australian Children and Young People

The effects of socio-economic position on the health of Australian children and young people are reflected in differential mortality rates. Mortality data are convenient to examine, as they are collected routinely across the whole population and coded using standardised definitions for cause and for some socio-economic indicators. Using such data, it is possible to examine inequalities across causes of mortality where different patterns may represent different pathways of influence and different time points in the lifecourse for which inequalities are greatest.

The following section provides a summary of mortality rates for infants (0-1 years), children (0-14 years) and young people (15-24 years) by area level SEP, Indigenous status and rural and remote status. Mortality rates are presented separately for males and females as some gender differences are evident. In each table, mortality rates for the least disadvantaged (or reference) group are presented to the left of the rates for the most disadvantaged group. Relative mortality differences for the population groups examined are expressed in terms of rate ratios (RR), with the age standardised rate for the most disadvantaged group expressed as a proportion of the age-standardised rate for the reference group. The rate ratio is an internationally accepted measure of inequality. However, rate ratios should be interpreted with caution, especially in cases where the absolute death rates are low.¹ Therefore the tables also present the differences in death rates between the reference and most disadvantaged group, expressed as the absolute difference (death rate for reference group minus the death rate for the most disadvantaged group). The absolute difference in mortality between the reference group and the most disadvantaged group may be regarded as an indicator of the number of deaths attributable to the socio-economic differences between the groups. The proportion difference (absolute difference divided by the death rate for the reference group) is another method for expressing the relative difference in mortality between the groups, directly comparable to the rate ratio.²

The data reported here have been extracted primarily from the work of Turrell and colleagues (Turrell and Mathers, 2000; Draper, Turrell & Oldenburg, 2004) and are based on Australian Bureau of Statistics (ABS) data collections.

Mortality Inequalities by Area-Level Socio-economic Disadvantage

Table 2.2 presents mortality rates (1998-2000) for Australian infants, children and young people up to age 24 years according to highest and lowest quintiles for area-level socio-economic disadvantage (Draper, Turrell & Oldenburg, 2004). Across all ages and health conditions, males and females from the most disadvantaged quintile had mortality rates that were 1.3 to 3.3 times higher than for males and females from the most advantaged quintile as shown by the rate ratios. With the exception of mortality due to perinatal conditions for girls, these differences were statistically significant. The authors also report a reasonably consistent gradient effect (shown in data not presented here). Across most causes, mortality rates increased with each quintile of increasing area-level socio-economic disadvantage.

For infants, the greatest mortality inequalities were evident for deaths from Sudden Infant Death Syndrome (SIDS). Area-level disadvantage was associated with a 204% higher death rate for males and a 147% higher death rate for females. This represented 66 and 43 more deaths (per 100,000) for males and females respectively, from the most disadvantaged group compared to the reference group. However, perinatal and congenital conditions were more common causes of death at this age. While these causes showed less marked area-level inequalities, their greater prevalence resulted in a greater difference in the number of deaths between the reference and most disadvantaged group than was observed for SIDS. For males, area-level disadvantage was associated with a 59% higher death rate for perinatal conditions, equating to 131 more deaths (per 100,000), and a 61% higher death rate for congenital

¹ See Draper et al 2004 for more extensive discussion, including potential sources of error in mortality analyses.

² For example, a proportion difference of 40% equates to a rate ratio of 1.4; a proportion difference of 140% equates to a rate ratio of 2.4; a proportion difference of 240% equates to a rate ratio of 3.4.

conditions, equating to 71 more deaths (per 100,000) for the most disadvantaged group compared to the reference group. For females, less marked, but similar patterns were evident. Perinatal and congenital conditions were associated with 52 and 51 more deaths (per 100,000) respectively for the most disadvantaged group compared to the reference group.

These findings suggest that pregnancy and early life conditions are significantly less optimal for infants born to mothers resident in low socio-economic areas. The relatively high difference by area level disadvantage in the rates of infant deaths suggests that considerable opportunity remains for further reductions in infant mortality

For children aged 0-14 years and young people aged 15-24 years, males had consistently higher mortality rates and experienced greater mortality inequalities arising from area-level disadvantage than females. In the younger age range (0-14 years), area-level disadvantage was associated with a 233% higher death rate due to accidents and injury for males compared to 156% for females. These differences translated into 11 and 6 more deaths (per 100,000) for males and females respectively from the most disadvantaged group compared to the reference group. In the older age range, area-level disadvantage was associated with a 103% higher death rate due to accidents and injury for males compared to 67% for females, accounting for a difference of 46 and 10 more deaths (per 100,000) respectively. Within this category for cause of death, there were 18 and 15 more transport and suicide deaths (per 100,000) for males from the most disadvantaged group compared to the reference group, compared to 10 and 7 more transport and suicide deaths (per 100,000) for females from the most disadvantaged group compared to the reference group.

These area-level differences in mortality rates may reflect the impact of differential exposures, with such things as poor housing, unsafe home and community environments and poor parental supervision varying by socio-economic circumstances. The greater impact of area-level socio-economic differences on males may reflect additional risk from exposure to unsafe situations due to such things as gender-related differences in the amount of parental supervision provided to sons compared with daughters or in individual risk-taking behaviour.

The data in Table 2.2 illustrate the complexity of socio-economic influences on mortality. For example, the development of interventions to reduce mortality from accidents and injuries will require an understanding of the pathways that lead to such deaths and how these vary by socio-economic circumstances, age and gender. Such pathways are likely to be complex and involve multiple likely contributing factors, spanning individual characteristics (e.g. temperament, depression and risk taking behaviours), parenting practices (e.g. monitoring and supervision) social influences (e.g. peer-group behaviours) and environmental conditions (e.g. neighbourhood safety).

Table 2.2: Age standardised mortality rates (deaths per 100 000) between the lowest and highest quintiles of socio-economic disadvantage of area (IRSD), for Australian infants, children and young people 1998-2000, by gender and cause.¹

Cause	<u>Males (0-1 yrs)</u>				<u>Females (0-1 yrs)</u>			
	High ²	Low ²	Difference (%) ³	Rate Ratio ⁴	High ²	Low ²	Difference (%) ³	Rate Ratio ⁴
Perinatal conditions	220.5	351.4	130.9 (59.4)	1.6**	187.0	238.6	51.6 (27.6)	1.3*
Congenital conditions	116.4	187.0	70.6 (60.7)	1.6***	103.2	153.8	50.6 (49.0)	1.5**
Sudden infant death syndrome	32.2	97.9	65.7 (204.0)	3.0***	29.0	71.6	42.6 (146.9)	2.5***
All causes	419.6	756.7	337.1 (80.3)	1.8***	372.3	586.0	213.7 (57.4)	1.6***
	<u>Males (0-14 yrs)</u>				<u>Females (0-14 yrs)</u>			
	High ²	Low ²	Difference (%) ³	Rate Ratio ⁴	High ²	Low ²	Difference (%) ³	Rate Ratio ⁴
Accidents and injury	4.5	15.0	10.5 (233.3)	3.3***	3.6	9.2	5.6 (155.6)	2.6***
All causes	41.3	73.5	32.2 (78.0)	1.8***	35.9	58.2	22.3 (62.1)	1.6***
	<u>Males (15-24 yrs)</u>				<u>Females (15-24yrs)</u>			
	High ²	Low ²	Difference (%) ³	Rate Ratio ⁴	High ²	Low ²	Difference (%) ³	Rate Ratio ⁴
Accidents and injury ⁵	44.4	89.9	45.5 (102.5)	2.0***	15.3	25.6	10.3 (67.3)	1.7***
Transport	17.0	34.5	17.5 (102.9)	2.0***	6.3	9.8	3.5 (55.6)	1.6*
Suicide	14.8	30.1	15.3 (103.4)	2.0***	4.6	7.3	2.7 (58.7)	1.6*
All causes	63.9	120.9	57.0 (89.2)	1.9***	28.0	43.7	15.7 (56.1)	1.6***

¹From Draper, Turrell and Oldenburg, 2004. ²For lowest and highest socio-economic quintiles (20%) as measured by the Index of Relative Socio-economic Disadvantage (IRSD), where high represents the highest socio-economic position. ³Absolute difference between reference (highest quintile) and most disadvantaged (lowest quintile) group, proportion calculated as absolute difference divided by death rate for reference group. ⁴Rate for reference group divided by most disadvantaged group, significant at: * = p<.05; ** = p<.01; *** = p<.001. ⁵Includes transport and suicide rates, which are also presented separately.

Mortality Inequalities by Indigenous Status

In Australia, the health of Indigenous children and young people is an issue of particular concern. Indigenous children are more likely to be born to young, single, poorly educated mothers and to be raised in multi-family households. For Indigenous children growing up in isolated communities, inadequate access to housing, water and other basic facilities contributes to high rates of infectious diseases and associated problems such as otitis media. Across the lifecourse, Indigenous children fare more poorly than their non-Indigenous peers on all major outcomes including birth outcomes, expected lifespan, physical health, educational attainment, employment, exposure to domestic violence and abuse, and contact with the criminal justice system (Australian Government Taskforce on Child Development, Health and Wellbeing, 2003a).

Age-specific all-cause mortality rates for Australian Indigenous infants, children and young people in comparison to all Australian infants, children and young people, are shown in Table 2.3 for 1995-1997 (ABS,1997). Age-specific mortality rates were 1.9-3.8 times higher for Indigenous infants, children and young people than for all Australian infants, children and young people. The highest inequalities were evident for girls less than 5 years of age (rate ratios of 3.5-3.8) and for boys aged 5-14 years (rate ratio = 3.3).

Again, gender differences were evident, with different patterns by age. Indigenous status was associated with higher rates of mortality inequalities for males (compared to females) in the 5-14 years and 15-24 years age groups. For males, Indigenous status was associated with a 233% increased risk for death at ages 5-14 years, and 167% increased risk at ages 15-24 years. This equates to 42 and 172 more deaths (per 100,000) for Indigenous vs. all males in the 5-14 and 15-24 year age groups respectively.

In contrast, at the younger ages, Indigenous status was associated with higher mortality inequalities for females (compared to males), although absolute deaths rates were similar by gender. For females, Indigenous status was associated with a 250% increased risk for death at ages 0-1 years, and a 278% increased risk for death at ages 1-4 years. These differences equate to 1236 and 75 more deaths (per 100,000) for Indigenous vs. all females in the 0-1 and 1-4 year age groups respectively.

When compared against the all-cause mortality rate ratios for area-level disadvantage shown in Table 2.2, the figures in Table 2.3 show that inequalities arising from Indigenous status (rate ratios of 1.9-3.8) are substantially greater than those arising from area-level socio-economic status (rate ratios of 1.6-1.9). However, such comparisons should be interpreted with caution as Indigenous status is measured at the level of the individual, while area-level socio-economic disadvantage is a derived variable measured across the population living in a defined geographic area in which the individual resides. As noted earlier, area-level measures are imprecise indicators of individual socio-economic circumstances, and typically under-estimate the relationship between socio-economic circumstances and health (Hyndman et al., 1995). Nonetheless, the data presented in Table 2.3 provide evidence in support of the comments from earlier pediatric researchers who noted that the deprivation and ill-health experienced by the Indigenous population in Australia more closely resembles that of developing countries than that of minority groups in other developed countries (Jolly, 1990).

Table 2.3: Age-specific all-cause mortality rates (deaths per 100 000) for Indigenous and all Australian infants, children and young people 1995-1997, by gender and age.¹

Age group (years)	Males				Females			
	All Australians ²	Indigenous ³	Difference (%) ⁴	Rate Ratio ⁵	All Australians ²	Indigenous ³	Difference (%) ⁴	Rate Ratio ⁵
Less than 1 year	605	1873	1268 (209.6)	3.1	495	1731	1236 (249.7)	3.5
1-4 years	38	114	76 (200.0)	3.0	27	102	75 (277.8)	3.8
5-14 years	18	60	42 (233.3)	3.3	14	29	15 (107.1)	2.1
15-24 years	103	275	172 (167.0)	2.7	36	69	33 (91.7)	1.9

¹From: ABS (1997). *Occasional Paper – Mortality of Australian and Torres Strait Islander Australians – 3315.0*. Canberra: ABS.

²Rates for all deaths across all states and territories, including deaths identified as Indigenous.

³Rates for deaths identified as Indigenous usual residents of Western Australia, South Australia and the Northern Territory combined.

⁴Absolute difference between all Australians and Indigenous, proportion calculated as absolute difference divided by death rate for all Australians.

⁵Indigenous rate divided by Australian rate.

Mortality Inequalities by Geographical Remoteness

Australia is highly urbanised. In 2001, 66% of the population resided in major metropolitan cities, 31% in inner and outer regional areas, and 3% in remote and very remote areas (ABS, 2003). Rural and remote status is another social indicator of concern. Australians living in remote regions have quite different health patterns from those resident in metropolitan areas and markedly less equitable access to health services. Additionally, the composition of the population living in remote regions varies markedly from that of urban populations, in terms of the proportion of the population that is Indigenous. In 2001, 49.3% of persons living in remote/very remote areas were Indigenous, compared to only 1.1% of those in major cities (ABS, 2003). In the following section we examine first the evidence for geographical morbidity inequalities across childhood and adolescence, and then examine the influence of Indigenous status as one possible explanation for these inequalities. Table 2.4 shows the age-standardised mortality rates for infants, children and young people living in the most accessible vs. most remote areas for 1998-2000 (Draper, Turrell & Oldenburg, 2004). Mortality rates were 1.4-3.8 times higher for children and young people living in remote areas. These inequalities were evident across all causes of mortality, although these were not statistically significant for deaths due to congenital conditions for male infants or deaths due to suicide for females aged 15-24 years.

For males, geographical remoteness was associated with a 44% (for congenital conditions, 0-1 years) to 280% (for suicide, 15-24 years) increase in mortality. The greatest differences in absolute death rates between males living in the most and least remote areas were for perinatal conditions 0-1 years (61%, 156 more deaths) and accidents and injury 15-24 years (190%, 115 more deaths). For each age group, there were 429 (0-1 years), 48 (0-14 years) and 128 (15-24 years) more deaths for males living in the most remote areas compared to those in most accessible areas.

For females, geographical remoteness was associated with an 80% to 195% increase in mortality (for suicide 14-25 years and accidents 0-14 years respectively). The greatest differences in absolute death rates between females living in the most and least remote areas were for perinatal conditions 0-1 years (120%, 243 more deaths) and congenital conditions 0-1 years (172%, 139 more deaths). For each age group, there were 661 (0-1 years), 54 (0-14 years) and 53 (15-24 years) more deaths for females living in the most remote areas compared to those in most accessible areas.

Comparison of the remote area morbidity inequalities illustrated by the rate ratios in Table 2.4 with the socio-economic area-level inequalities in Table 2.2 indicates that for boys aged 0-14 years, remote residence conferred similar levels of mortality inequality (all-cause rate ratio = 1.8) to area-level disadvantage (all-cause rate ratio = 1.9). In contrast, for girls 0-1 years, girls 0-14 years, and males and females 14-25 years, remote residence was associated with higher mortality inequalities than area-level disadvantage. For these groups, the all-cause mortality rate ratios for geographic remoteness ranged from 2.3-2.6 whereas the all-cause mortality rate ratios for area-level disadvantage ranged from 1.6-1.9.

Table 2.4: Age standardised mortality rates (deaths per 100 000) between the most accessible and most remote geographical areas (ARIA) for Australian infants, children and young people 1998-2000, by gender and cause.¹

Cause	<u>Males (0-1 yrs)</u>				<u>Females (0-1 yrs)</u>			
	Accessible ²	Remote ²	Difference (%) ³	Rate Ratio ⁴	Accessible ²	Remote ²	Difference (%) ³	Rate Ratio ⁴
Perinatal conditions	257.0	412.6	155.6 (60.5)	1.6***	202.9	445.8	242.9 (119.7)	2.2***
Congenital conditions	146.3	210.1	63.8 (43.6)	1.4	123.1	294.6	171.5 (139.3)	2.4***
All causes	539.0	967.8	428.8 (79.6)	1.8***	430.0	1090.7	660.7 (153.7)	2.5***
	<u>Males (0-14 yrs)</u>				<u>Females (0-14 yrs)</u>			
	Accessible ²	Remote ²	Difference (%) ³	Rate Ratio ⁴	Accessible ²	Remote ²	Difference (%) ³	Rate Ratio ⁴
Accidents and injury	8.5	23.4	14.9 (175.3)	2.8***	5.6	16.5	10.9 (194.6)	2.9***
All causes	53.7	101.3	47.6 (88.6)	1.9***	42.4	96.8	54.4 (128.3)	2.3***
	<u>Males (15-24 yrs)</u>				<u>Females (15-24yrs)</u>			
	Accessible ²	Remote ²	Difference (%) ³	Rate Ratio ⁴	Accessible ²	Remote ²	Difference (%) ³	Rate Ratio ⁴
Accidents and injury ⁵	60.5	175.6	115.1 (190.2)	2.9***	18.9	55.4	36.5 (193.1)	2.9***
Transport	23.7	67.7	44.0 (185.7)	2.9***	7.9	21.4	13.5 (170.9)	2.7***
Suicide	20.1	76.3	56.2 (279.6)	3.8***	5.4	9.7	4.3 (79.6)	1.8
All causes	85.1	212.5	127.4 (149.7)	2.5***	32.9	86.1	53.2 (161.7)	2.6***

¹From Draper, Turrell and Oldenburg, 2004.

²Defined by the Accessibility/Remoteness Index of Australia (ARIA) based on road distance to the closest urban centre.

³Absolute difference between accessible and remote, proportion calculated as absolute difference divided by death rate for accessible.

⁴Remote rate divided by accessible rate.

⁵Includes transport and suicide rates, which are also presented separately.

However, the extent to which these geographical inequalities were confounded by Indigenous status needs to be considered. This issue has been examined by several researchers in relation to infant, child and adolescent mortality, with mixed results. In a re-examination of the national mortality data shown in Table 2.4, using only non-Indigenous infants, children and young people, Draper, Turrell and Oldenburg (2004) found no evidence of mortality inequalities by geographical remoteness. Similarly, in Queensland and South Australia, non-Indigenous neonatal and fetal deaths were not found to vary by remoteness (Coory, 2003; South Australian Department of Human Services, 2001), and in Queensland Indigenous neonatal and fetal death rates did not vary by remoteness. However, in South Australia, Indigenous neonatal and fetal deaths were substantially higher for infants from remote locations (South Australian Department of Human Services, 2001), and in New South Wales, fetal mortality inequalities were associated with remote status for both Indigenous and non-Indigenous babies (Roberts & Algert, 2000). Collectively, these studies suggest that in some regions of Australia mortality inequalities associated with geographical remoteness largely reflect inequalities in Indigenous mortality, while in other regions, both remoteness and Indigenous status contribute to higher rates of death in early life.

Further understanding of the impact of geographical remoteness on health inequalities may come from research that examines potential pathways linking remoteness and Indigenous status to health outcomes, taking into account the impact of regional variations in the physical environments and health services of remote families and communities. The data in Table 2.4 show that mortality rates and mortality inequalities vary by cause of death, age and gender, suggesting that these factors will need to be taken into account for developing effective preventive interventions.

Temporal Changes in Mortality Inequalities for Children and Young People

Finally, it is important to examine trends over time to determine whether inequalities in mortality rates have increased, decreased or remained constant. Table 2.5 shows the extent to which area-level socio-economic inequalities in mortality for Australian children and young people have changed between 1985-1987 and 1995-1997 (Turrell & Mathers 2000). The table shows the age-standardised mortality rates for the highest and lowest quintiles of area-level socio-economic disadvantage, absolute differences in rates, and rate ratios, presented separately for males and females aged 0-14 years and 15-24 years.

Table 2.5 shows that consistent gains have been achieved in terms of early life mortality from 1985-87 to 1995-97. For males and females aged 0-14 years mortality rates (all-cause and for each specific cause) have declined over this time. These declines were evident for those in both the highest and lowest quintiles for area-level disadvantage. With one exception (SIDS deaths for males), the absolute differences in number of deaths between the least and most disadvantaged quintiles were also reduced.

Table 2.5: Age standardised mortality rates (deaths per 100 000) between the lowest and highest quintiles of socio-economic disadvantage of area (IRSD), for Australian children and young people 1985-87 and 1995-97, by gender and cause.¹

Cause	<u>Males (0-14 yrs) 1985-87</u>				<u>Males (0-14 yrs) 1995-97³</u>			
	High ²	Low ²	Difference (%) ³	Rate Ratio ⁴	High ²	Low ²	Difference (%) ³	Rate Ratio ⁴
Perinatal conditions	23.5	36.0	12.5 (53.2)	1.5	16.5	22.9	6.4 (38.8)	1.4**
Sudden infant death syndrome	16.3	19.5	3.2 (19.6)	1.2	2.7	7.4	4.7 (174.1)	2.7**
Accidents and injury ⁵	12.4	25.1	12.7 (102.4)	2.0	7.3	16.1	8.8 (120.5)	2.2*
Transport	6.2	9.4	3.2 (51.6)	1.5	2.2	5.5	3.3 (150.0)	2.5**
All causes	83.8	125.6	41.8 (49.9)	1.5	48.0	77.6	29.6 (61.7)	1.6**
Cause	<u>Females (0-14 yrs) 1985-87</u>				<u>Females (0-14 yrs) 1995-97³</u>			
	High ²	Low ²	Difference (%) ³	Rate Ratio ⁴	High ²	Low ²	Difference (%) ³	Rate Ratio ⁴
Perinatal conditions	15.1	28.6	13.5 (89.4)	1.9	13.8	19.4	5.6 (40.6)	1.4**
Sudden infant death syndrome	8.7	14.7	6.0 (69.0)	1.7	1.9	6.0	4.1 (215.8)	3.2**
Accidents and injury ⁵	7.6	14.0	6.4 (84.2)	1.8	4.8	8.4	3.6 (75.0)	1.8
Transport	3.6	6.9	3.3 (91.7)	2.0	1.9	2.7	0.8 (42.1)	1.4**
All causes	58.7	97.9	39.2 (66.8)	1.7	40.3	58.5	18.2 (45.2)	1.5**

Continued...

	<u>Males (15-24 yrs) 1985-87</u>				<u>Males (15-24 yrs) 1995-97³</u>			
	High ²	Low ²	Difference (%) ³	Rate Ratio ⁴	High ²	Low ²	Difference (%) ³	Rate Ratio ⁴
Accidents and injury ⁵	79.2	116.1	36.9 (46.6)	1.5	48.5	96.0	47.5 (97.9)	2.0**
Transport	42.8	60.0	17.2 (40.2)	1.4	17.4	39.3	21.9 (125.9)	2.3**
Suicide	20.3	27.4	7.1 (35.0)	1.4	19.8	34.7	14.9 (75.3)	1.8**
All causes	100.2	149.3	49.1 (49.0)	1.5	72.6	129.4	56.8 (78.2)	1.8**
	<u>Females (15-24 yrs) 1985-87</u>				<u>Females (15-24 yrs) 1995-97</u>			
	High ²	Low ²	Difference (%) ³	Rate Ratio ⁴	High ²	Low ²	Difference (%) ³	Rate Ratio ⁴
Accidents and injury ⁵	23.6	39.2	15.6 (66.1)	1.7	15.7	23.4	7.7 (49.0)	1.5*
Transport	14.2	22.2	8.0 (56.3)	1.6	6.6	12.1	5.5 (83.3)	1.8**
Suicide	5.8	7.5	1.7 (29.3)	1.3	6.1	5.8	-0.3 (4.9)	0.95**
All causes	40.2	61.9	21.7 (54.0)	1.5	29.9	42.0	12.1 (40.5)	1.4**

¹From Turrell and Mathers, 2000.

²For lowest and highest socio-economic quintiles (20%) as measured by the Index of Relative Socio-economic Disadvantage (IRSD), where high represents the highest socio-economic position.

³Absolute difference between reference (highest quintile) and most disadvantaged (lowest quintile) group, proportion calculated as absolute difference divided by death rate for reference group.

⁴Rate for reference group divided by most disadvantaged group, significant at: * = p<.01; ** = p<.001.

⁵Includes transport and suicide rates, which are also presented separately.

Despite these gains, for males aged 0-14 years, mortality inequalities had typically widened over time, as indicated by the proportion difference in absolute death rates. For all causes of death, the proportion difference in death rates between the least and most disadvantaged increased from 50% higher for the most disadvantaged in 1985-87 to 62% higher in 1995-97. Nonetheless, there was a decrease over this period in the differences between groups for absolute mortality. The absolute differences dropped from 42 deaths in 1985-87 to 30 deaths (per 100,000) in 1995-1997. The increase in inequalities for males was most marked for deaths due to congenital conditions, which changed from 20% higher for the most disadvantaged boys to 174% higher and transport deaths which changed from 52% higher for the most disadvantaged to 150% higher. However, in both cases, these causes of death were relatively uncommon amongst the 0-14 years age group. They equated to a small increase in the absolute difference between the most and least disadvantaged groups, from 3 to 5 more deaths (per 100,000) for congenital conditions and from 3.2 to 3.3 more deaths (per 100,000) from transport accidents. The exception to this trend for widening inequalities was deaths from perinatal conditions which reduced from being 53% higher for the most disadvantaged group, to 39% higher. This represented a decreased difference in absolute deaths, down from 13 more deaths to 6 more deaths (per 100,000) for those from the most disadvantaged group.

For females aged 0-14 years, trends over time were mixed. For all causes of death, the proportion difference in death rates between the least and most disadvantaged decreased from 67% higher for the most disadvantaged girls in 1985-87 to 45% higher in 1995-97. This equated to a decrease in the absolute difference between the most and least disadvantaged groups, from 39 deaths in 1985-87 to 18 deaths (per 100,000) in 1995-97. The reduction in inequalities was most notable for deaths due to perinatal conditions, which declined from 89% higher for the most disadvantaged to 41% higher, and for accidents which declined from 84% higher for the most disadvantaged to 75% higher. These changes were associated with a reduction in the absolute differences from 14 to 6 more deaths (per 100,000) and from 6 to 4 more deaths (per 100,000) respectively. In contrast, inequalities in SIDS deaths increased over this time for females. The proportion difference between the least and most disadvantaged increased from 69% higher in 1985-87 to 216% higher, although the absolute difference in number of SIDS deaths reduced for the same period from 6 to 4 more deaths (per 100,000).

As shown in Table 2.5, for males and females aged 15-24 years mortality rates (all-cause and for each specific cause) have also declined over time. Again, these declines were evident for those in both the highest and lowest quintiles for area-level disadvantage. For females, this was also reflected in a reduction in the absolute differences over time between the least and most disadvantaged groups (reduced from 22 to 12 more deaths per 100,000), but for males, the absolute differences increased over time (increased from 49 to 57 more deaths per 100,000).

For males aged 15-24 years, mortality inequalities widened from 1985-87 to 1995-97. Inequalities increased the most for transport deaths from 40% higher for the most disadvantaged males to 126% higher, representing an increase from 17 to 22 more deaths (per 100,000) for those from the most compared to least disadvantaged group.

For females aged 15-24 years, mortality inequalities generally narrowed from 1985-87 to 1995-97. For example, inequalities in all deaths due to accidents and injuries reduced from 66%

higher for the most disadvantaged females to 49% higher, representing a decrease from 16 to 8 more deaths (per 100,000) for those from the most compared to least disadvantaged group. While inequalities in transport deaths increased from 56% higher for the most disadvantaged females to 83% higher, there was a reduction in absolute death rate differences from 8 to 6 more deaths (per 100,000). For suicide, a reversal in inequalities occurred from 1985-87 to 1995-97. At the latter time, females from the most disadvantaged quintile had fewer suicide deaths than females from the least disadvantaged quintile (0.3 fewer deaths per 100,000), as reflected by a rate ratio of 0.95 (significantly reduced from 1.3 at the early time period).

Collectively, the data on Table 2.5 show that patterns in mortality and inequalities associated with area-level disadvantage vary by cause of death, age and gender. To understand these changes over time, it is necessary to consider the range of factors that may be influencing mortality for each specific cause of death. For example, in the case of SIDS deaths, where inequalities have increased despite major reductions in actual death rates, there are at least two likely explanations for the observed changes. The decade from 1985-87 to 1995-97 was marked by high profile public campaigns to educate parents about the optimal sleeping position for infants. It is possible that this message was more readily acted upon by parents of higher socio-economic circumstances, providing a differential outcome in terms of SIDS prevention. Alternatively, infant sleeping position is one of several risk factors for SIDS. Other risk factors may be more directly related to adverse family socio-economic circumstances (e.g. heating, housing, parental smoking), and therefore the elimination of sleeping position as a major contributing factor may have resulted in an exacerbation of inequalities by increasing the relative contributions of the other factors.

The varying outcomes in Table 2.5 suggest that there is no single underlying factor accounting for the variation in social circumstances (Turrell & Mathers, 2000). Further efforts to reduce inequalities need to be based on sophisticated models of the potential etiological mechanisms by which socio-economic factors impact on different health outcomes for different populations.

The mortality data summarised in this section have provided clear evidence that area-level socio-economic status, Indigenous ethnicity and geographical disadvantage confer an increased risk for death during infancy, childhood and adolescence. Mortality data have been used as an illustration, and similar relationships can be found between disadvantage and a range of other childhood and adolescent health outcomes (Jolly, 1990; Jolly et al., 1993; Moon et al., 1998).

The data presented also demonstrate that the associations between disadvantage and mortality are highly complex and vary by: individual characteristics (such as gender); age or life-stage; the cause of mortality; temporal factors (such as changes in the health service and policy environment); and the measure of disadvantage that has been employed. The geographical data in particular, also highlight the care needed in interpreting observed trends. Indicators of SEP such as remote status and Indigenous ethnicity, are not independent and national data need to be collected and presented in ways that allow for the unpacking of the relative contributions of different sources of disadvantage. The mechanisms and pathways that link disadvantage to increased mortality and poor health are complex and poorly understood. Several models have been proposed that illustrate the likely relationships that exist between social-contextual factors and health. Some of these models and their implications are discussed in next section.

3. Contemporary Models of the Socio-economic Determinants of Childhood and Adolescent Health

3.1 The Determinants of Child and Adolescent Health

From the Australian mortality data presented in the previous section, it is clear that socio-economic factors, Indigenous status and geographic location contribute to unequal health outcomes for infants, children and young people. The impact of these social-structural factors varied by cause of death, age and gender, reinforcing the view that different mechanisms and pathways are involved (Turrell & Mathers, 2000). This means that effective interventions to reduce health inequalities will require an understanding of the pathways to health and various contextual factors that influence health across the life-course. This section examines some contemporary models of health and discusses the implications of these models for future research and the development of interventions to reduce health inequalities.

Health is acknowledged to arise from the complex interactions that occur between the individual, the inherited risks and resiliencies of that individual, and the multiple environments in which he or she is raised. Figure 3.1 presents an ecological model of health that places the health of the child as occurring within the context of the family, school, community and broader socio-economic and political environments.

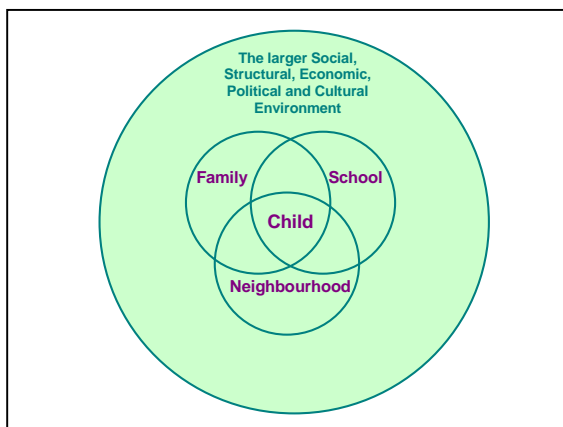


Figure 3.1: Ecological contexts shaping child health and development.

From Zubrick, Williams, Silburn & Vimpani, 2000.

While this model was not developed specifically to provide insights into the effects of socio-economic disadvantage on children's health, it has been adopted widely within Australia as a guiding framework for a number of contemporary health strategies and national studies of child health (e.g. Australian Government Task Force on Child Development, Health and Wellbeing 2003a; Sanson et al., 2002; Queensland Health 2002). Its adoption therefore suggests that policies and practices designed to influence health inequalities should consider the relative contributions of the family, school, neighbourhood and broader socio-political contexts.

A comprehensive socio-ecological model designed specifically to illustrate the influence of socio-economic factors on health has been developed by Turrell, Oldenburg, McGuffog and

Dent (1999) as shown in Figure 3.2. In this model, socio-economic influences occur within a broad cultural context and span multiple levels of influence. Pathways to poor health can be traced from the upstream or macro factors (such as inequitable government policies and economic conditions), through midstream or intermediate factors (such as limited social supports and adverse health behaviours), to physical health changes at the downstream or individual level. The model illustrates that an understanding of the effects of socio-economic inequalities in health requires an understanding of the influential factors that exist at different levels and of the pathways between these levels.

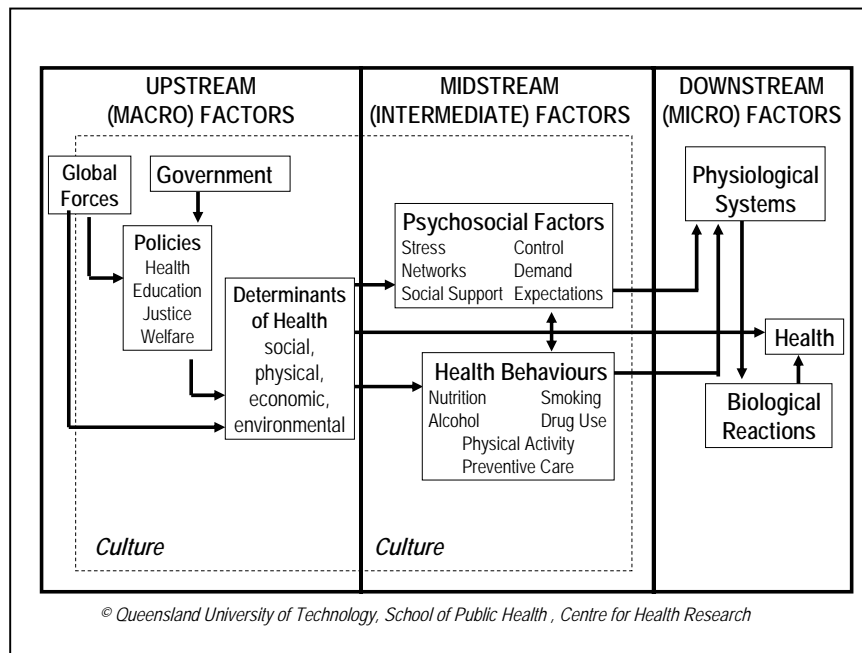


Figure 3.2: A framework of socio-economic health determinants.

From Turrell, Oldenburg, McGuffog & Dent, 1999.

The model in Figure 3.2 has several strengths as a framework for guiding our thinking about the ways by which socio-economic factors influence health. First, in this model, the physical environment is included within the upstream factors. This allows for consideration of health-compromising physical exposures that may vary by socio-economic circumstances, Indigenous status and geographical location. These may include exposure to environmental lead and air pollution, restricted access to clean water and adequate housing, and the safety of the home and neighbourhood environments.

Second, the model illustrates the flow of influence from more macro (upstream) to micro (downstream) factors, with the implication that population-wide reductions in health inequalities may be achieved by addressing upstream influences. Such interventions may focus on the development of social, economic and other policies that promote equitable distribution of resources and opportunities, and that create and support health-promoting environments for all. In addition, it is possible using this framework to identify the potential pathways by which macro-environmental changes (such as a public health campaign) may impact on individual outcomes, with barriers encountered at the midstream level (e.g. lack of social support for behaviour change, lack of access to media messages) potentially preventing equitable outcomes for all, as was speculated in the case of SIDS mortality described earlier.

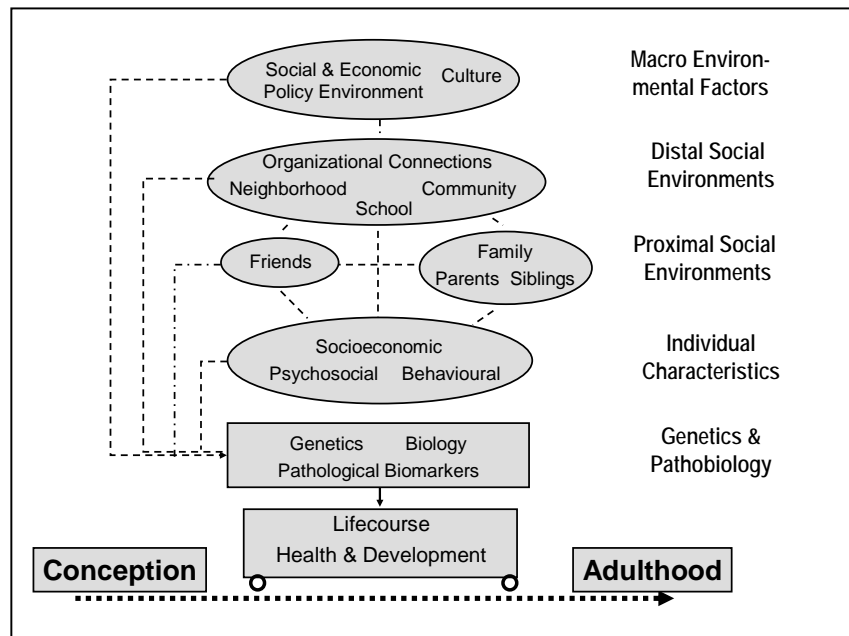
Third, the model explicates some of the key factors influencing health that could be targeted for intervention with specific individuals or populations. These may include building supportive communities, development of healthy work environments and providing health behaviour interventions for high-risk groups.

However, the model has several limitations when applied to the health of children and young people. It does not include several contexts that are particularly relevant in early life (e.g. family, child-care, schools and peer groups). Nor does it reflect the extent to which the influence of key contexts varies across the lifecourse.

Representation of life-course pathways across multiple contexts and their dynamic changes across time, are challenging to illustrate in a single two-dimensional model. We therefore present two final models which, when combined, provide a more comprehensive picture of the socio-economic and other determinants of health from a lifecourse or developmental perspective. These are shown in Figures 3.3 and 3.4. The model in Figure 3.3 from Lynch (2000) shows the pathways from more distal to proximal settings and their influences on health across the lifecourse. Figure 3.4 from the Committee on the Prevention of Mental Disorders (Mrazek & Heggarty, 1994) depicts the dynamic changes that occur across the lifecourse in both the degree of influence these contexts exert on health outcomes, and the changing nature of developmental milestones and health outcomes.

Figure 3.3: Ecological model of health and development across the lifecourse.

From Lynch, 2000.



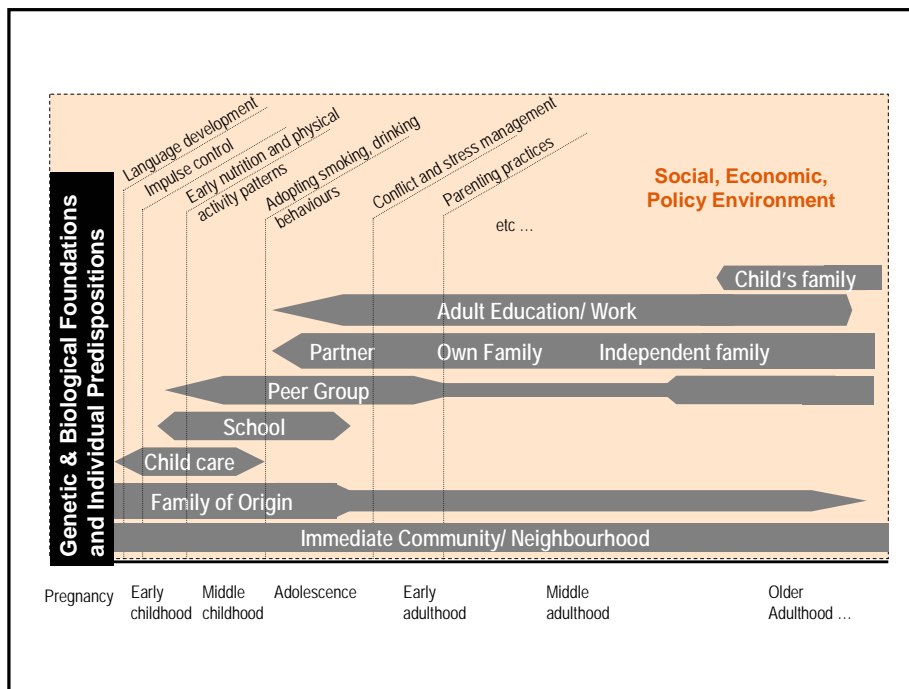


Figure 3.4: Life-course contexts influencing health and development.

From the Committee on the Prevention of Mental Disorders (Mrazek & Heggarty, 1994).

These combined models have several advantages over the Turrell model (Figure 3.2) for depicting the potential effects of socio-economic factors on the health of children and young people. In particular, they highlight the central role of parents, family and peers in causal processes during the early years of life. Family context (which includes factors such as parent-child attachment, parent-child interactions, parenting practices and family conflict) has been widely recognised as having a significant influence of children's health. Parental risk and protective factors including such things as parental smoking and drug use, parental mental health and parental health knowledge and health behaviours, and peer group influences are also important mediators of the relationships between the macro and distal social determinants and health outcomes. The models also identify the influences of key institutions such as child-care settings and schools on health and development.

For simplicity, feedback processes have not been represented in the pathways shown in the Lynch model (Figure 3.3). However, these occur at all levels. Individuals interact with their environments and influence the circumstances to which they are exposed. For example, the influence of children's antisocial behaviours on their relationships with parents and peers have been widely recognised as further contributing to and maintaining adverse environmental circumstances and adding to the risks for poor psychosocial adjustment (Sanders, Gooley, and Nicholson, 2000). Conversely, some circumstances (e.g. harmonious family relationships, social support) and individual characteristics (e.g. social skills) can have a protective effect that moderates the impact of other adverse circumstances and disrupt the pathways of adversity.

The models in Figures 3.3 and 3.4 have several implications for research into health inequalities, particularly regarding the measurement of socio-economic influences. In addition to indicating the potential mechanisms that may mediate how socio-economic circumstances impact on health, they also highlight the multiple contexts in which children grow and develop. This suggests that a comprehensive approach to the measurement of socio-economic

circumstances could involve measurement across multiple contexts including neighbourhood, family, school, child-care and peer group. To date there has been little discussion or consensus regarding the measurement of SEP across multiple childhood contexts (Sleigh, Turrell & Oldenburg, 2004).

As an illustration of the complexities involved, it is useful to consider the measurement of childhood SEP at the level of the family. Typically, children's SEP has been assessed in terms of parents' individual-level indicators (e.g. parent education) or family indicators of multiple disadvantage (e.g. single parent family). This process may be relatively straight-forward for young children or children living in stable family situations. However families are dynamic and 53% of children under 18 years experience family breakdown due to parental divorce (ABS, 2003). For children from separated families, who live some of their time with each parent, the optimal approach to SEP measurement is not clear. Should SEP be estimated from the parent with whom the child spends the greatest proportion of time, or be based on both parent's households (possibly with some weighting involved)? This is not a trivial issue. A child may, for example, experience quite disadvantaged circumstances when living with one single, unemployed parent in rental housing, but more advantageous circumstances when staying for weekends and holidays with the other parent who may be remarried and working in a fulltime professional occupation. In this example, selection of one parent's household for the measurement of SEP could result in a ranking that falls within the lowest quintile for the population, while measurement of SEP based the other parent's circumstances, could give a ranking towards the upper end of the scale.

Further complexity is added to the measurement of SEP when the effects of other environments are considered. Between the ages of 5 and 17 years, children spend much of their waking hours at school and a considerable amount of behavioural, social and emotional development occurs within this context. In addition, children are now spending an increasing proportion of their preschool and out-of-school time in non-family care. The socio-economic characteristics of these settings should be therefore considered as potential sources of influence on health in much the same way as community and neighbourhood characteristics have been identified in the measurement of adult SEP. SEP at the school level typically involves examination of the school's characteristics such as enrolment size, teacher/student ratios, resources and proportion of Indigenous or non-English speaking students. The Index for Relative Socio-economic Disadvantage (IRSD) may also be applied to schools. It is based on census data for the community in which the school is located and is derived from indicators such as average income, educational attainment and occupation. We are not aware of any similar measurement approaches that have been used to establish the socio-economic characteristics of other care environments such as early childhood settings.

Implicit in the models shown in Figures 3.3 and 3.4, is the notion of clustering of risks across different levels of influence which may be particularly important in some populations. For example, children of Indigenous ethnicity, children raised in single parent families and children from non-English speaking homes may accumulate disadvantage across indicators such as low family income, parental low status occupation, social isolation, poor or overcrowded housing, unsafe neighbourhoods and restricted access to health services. These clusters of adverse socio-

economic and related factors collectively contribute to marked health deficits when compared to other less disadvantaged children and young people.

An important aspect of the model shown in Figure 3.4 is its illustration of the varying extent to which different contexts influence individual health across the lifecourse. By mapping key developmental tasks and health outcomes against these contexts, it is possible to identify the optimal timing for potential interventions and the contextual factors that may need to be considered by the intervention. For example: the development of neural pathways occurs primarily during pregnancy and infancy; behavioural and emotional patterns may become established during toddlerhood and childhood; and health risk and protective behaviours may become established during childhood and adolescence. In the latter case, the model highlights the importance of school and peer contexts during middle childhood and adolescence. This suggests that interventions need to consider the changes that may be required within these contexts to promote healthy outcomes.

While the models presented in Figures 3.3 and 3.4 arguably provide a comprehensive representation of factors influencing child and adolescent health, two additional lifecourse patterns require consideration. First, it should be noted that socio-economic factors themselves are not static, but also vary over time. For example, family income may vary, especially for lower socio-economic status families. Adults in these families are more likely to be employed in casual, part-time and seasonal positions and to experience associated fluctuations in levels of disadvantage. In addition, families from middle to higher socio-economic groups, who would not normally be regarded as disadvantaged, may experience periods of economic hardship due to transitions such as family breakdown or changes in employment. Therefore documenting the timing and duration of exposures to disadvantage are important.

Second, the effects of disadvantage on some health outcomes are related to the accumulation of risks across the lifecourse. This has been convincingly illustrated by Fergusson, Horwood and Lynskey's longitudinal research (Fergusson, Horwood & Lynskey, 1994). The authors described the life histories of young people in the Christchurch Health and Development Study and contrasted the most disadvantaged 5% of the cohort, with the most advantaged 50%. Amongst those young people who had experienced the greatest disadvantage (measured cumulatively from birth to age 15 years): only 13% were problem free by age 15 years; 65% had between one and five poor health outcomes (including such things as behavioural and emotional problems, early school leaving and substance use); and 22% had more than five poor health outcomes. In contrast, for children in the most advantaged half of the sample: the majority (81%) were problem free; 18% had between one and five problems; and less than 0.2% had five or more poor health outcomes.

Similar findings have been reported in British longitudinal studies (Rutter, 2000), although typically these studies have examined the effects of accumulated socio-economic disadvantage in combination with exposure to other risk factors such as poor parenting and parental mental health disorders. Nonetheless, the trends are clear. Those young people who accumulate socio-economic disadvantage across the childhood and adolescent years are also at risk of exposure to a range of adverse interpersonal circumstances, and experience markedly poorer health by adulthood (Fergusson et al. 1994; Rutter, 2000; Turrell et al., 2002). Moreover, for a wide

range of health outcomes, persistent socio-economic disadvantage across childhood has been shown to be a better predictor of health in early adulthood (age 26 years) than adult socio-economic circumstances (Poulton et al., 2002).

3.2 Implications for Research and Interventions

The socio-ecological models presented in this section have highlighted the complexity of factors influencing the health and wellbeing of children and young people. The models have illustrated the multiple environments or contexts in which health and development occurs and highlighted that these contexts provide:

- different socio-economic opportunities (and risks) each of which potentially contributes to an individual's socio-economic position;
- varying pathways by which the effects of socio-economic circumstances are translated into health effects; and
- different opportunities for intervention which may range from more population-wide preventive efforts (when addressing upstream determinants), through targeted prevention/ early intervention approaches (mainly midstream determinants), to individual treatment (downstream level).

The life-course models presented here have provided additional highlights, including:

- that socio-economic circumstances are dynamic across the life-course, influenced by both temporal changes in macro-environmental factors such as health policies and practice, and by changing personal circumstances;
- that socio-economic risk accumulates (across sources and over time) and confers a greater adverse health impact than exposure to single risk factors; and
- the extent of influence of different socio-economic contexts on health varies by life-course stage and the developmental and health changes occurring at each stage.

In addition, the mortality data illustrated that, while risk factors may be shared for a range of diverse health outcomes, socio-economic inequalities have differential impacts for different subpopulations (e.g. males vs. females, Indigenous vs. non-Indigenous) and health outcomes.

Thus, research into the effects of socio-economic factors on children's health requires a careful consideration of lifecourse pathways, with attention to pathways that may be unique to specific health conditions. It also needs to take account of dynamic variations, both in terms of the varying contexts that influence health across the lifecourse, and the temporal fluctuations that may occur to an individual's socio-economic circumstances. This requires longitudinal data, multi-level measurement and the application of quite sophisticated statistical methods.

In terms of efforts to address health inequalities, the data and models discussed here suggest that health inequalities are unlikely to be reduced by interventions that focus on single risk factors, or by interventions delivered at one period in the lifecourse. Rather, a suite of intervention approaches that address multiple determinants of health and are delivered at different stages of the life, are required.

In addition, it was shown that macro-level interventions such as public health campaigns and policy changes, whilst improving the health of the population as a whole, may also inadvertently increase inequalities by altering the relative impact of risk factors related to socio-economic status. It is therefore imperative that evaluations of such initiatives investigate whether differential outcomes occur for disadvantaged populations and how these can be addressed.

The range of contexts and potential mechanisms that may play a role in health inequalities as illustrated in the models further highlights the need for this research to draw on expertise spanning a range of health, social sciences and related disciplines. In turn, this has implications for workforce development and service systems design. Optimal solutions to health inequalities are going to require coordinated efforts across sectors such as health, welfare, education, employment, housing and local government.

4. Systematic Literature Review: Australian Child and Youth Health Inequalities Research 1998-2003

4.1 Aims

To reduce the adverse effects of health inequalities on children and young people, a comprehensive understanding is required of the influences of socio-economic circumstances on health. As was argued in the previous section, this knowledge will be generated through research that: employs a range of research methodologies (particularly longitudinal research); examines different sources of disadvantage (individual, parental, family and socio-ecological); accounts for dynamic changes in both the health outcomes of interest and their socio-economic influences; and explores potential sub-group differences.

The status of Australian health inequalities research has been examined in two previous reports covering studies published between 1971 and 1997 (Nicholson, Tually, and Vimpani, 2000; Turrell, Oldenburg, McGuffog and Dent, 1999). These reviews concluded that health inequalities research at that time was largely descriptive and there was a lack of longitudinal research or research across the early years of life. In particular, general physical health, cardiovascular health and psychosocial health were identified as areas that had been relatively neglected in childhood health inequalities research (Nicholson et al., 2000).

To determine whether there have been improvements in health inequalities research with children and youth, we undertook a systematic review. This aimed to identify the scope, strengths and weaknesses of studies published between 1998-2003. It involved analyses of the research designs employed, age groups studied, measurement of socio-economic position, health outcomes assessed and the impact (adverse, no effect, positive effect) of socio-economic factors on health.

4.2 Methods

Search Strategy

Literature searches were conducted in mid 2003 using the Web of Science and Science Direct search engines to identify all relevant listed journal paper abstracts published between January 1998 and March 2003 across the disciplines of medicine, health, psychology, education and other social sciences. To identify Australian research, the searches were limited to abstracts where the affiliation of one or more authors was listed as Australian. The search strategy involved selecting abstracts or keywords that included a term indicating the measurement of an early life population, socio-economic position, and one or more health outcomes. Specifically, the terms used for each of these were:

Early life population terms:

- pregnancy OR infan* OR child* OR preschool* OR birth OR preadolesc* OR prenatal OR postnatal OR adolesc* OR youth OR “young people”;

Socio-economic terms:

- “socioeconomic status” OR “socio economic status” OR ses OR “socioeconomic position” OR “social class” OR income OR education OR occupation OR poverty OR disadvantage OR inequality OR “social gradient” OR “health gradient OR indig* OR aborig* OR migrant OR “NESB”

Health outcome terms:

- mortality OR morbidity OR disease OR “health status” OR disorder OR psychosocial OR wellbeing OR “mental health” OR “mental illness” OR “mental disorder” OR suicid* OR behav* OR emotion* or adjustment OR “drug use” OR “drug abuse” OR “substance use” OR “substance abuse” OR abuse OR neglect OR maltreatment OR accident* OR alcohol OR smoking OR tobacco OR cigarette OR diabet* OR asthma OR respir* OR cancer OR cardiov* OR CVD OR “physical activity” OR obesity OR overweight OR nutrition OR “physical fitness” OR BMI OR hypertension OR cholesterol OR diet OR dental OR “oral health” OR myopia OR eye OR ear OR otitis OR paediatr* OR pediatr*

Using this process, over 1000 abstracts were identified as potentially relevant. These were printed and scanned independently by two of the listed authors for appropriateness. Several classes of paper were excluded, including those which: reported data for non-Australian populations; reported outcomes for adults; did not examine socio-economic determinants of health (e.g. studies where the term ‘education’ referred to an education intervention); adjusted for SEP factors in their analyses, but SEP differences were not specifically examined; were discussion or review papers and did not report on primary data; and explored genetic or pathobiological pathways (e.g. studies of immunological differences following exposure for Indigenous vs. non-Indigenous children).

The final pool of abstracts was then scanned for duplications that arose from using two search engines, and these were excluded. This process resulted in the identification of 118 papers which met our criteria of having a target population aged between conception and 18 years; involving the measurement of at least one SEP indicator as a determinant of a health outcome; and assessed a child or youth health outcome.

Data Extraction and Analysis

Abstracts from identified papers were coded by two of the authors using a manual of defined coding terms. In cases where the abstract provided insufficient detail for coding, full papers were obtained and coded. Each coder independently coded 8-12 papers to become familiar with the coding system. They then coded a random third of each other’s papers. Results were compared, inconsistencies discussed and the coding definitions refined as appropriate. All papers were then recoded and coding continued independently with checks after each 5-6 papers until coding reliability was in excess of 90% agreement. The researchers then coded the remaining papers. Data were entered into an Access database for analysis.

Studies were coded according to the following characteristics:

- Year of publication.
- Study design classified into mutually exclusive categories: concurrent associations; prospective associations; retrospective associations; qualitative; and intervention design.
- Ages at which the children's health outcomes were measured: conception to birth; birth to <2 years; from 2 to <5 years; from 5 to <12 years; and from 12 to 18 years. All ages examined were coded.
- Study findings: the SEP indicator/s used; the health outcome/s reported; and the direction of association (adverse, no effect, positive effect) between SEP and children's health.

Data analyses were descriptive and involved summarising the number and proportion of studies classified by year of publication, study design, age groups examined, SEP measures employed, health outcomes assessed and direction of significant associations between SEP and health outcomes.

4.3 Results

Study Designs and Age Groups Examined

The review identified 118 journal papers³ with abstracts published between January 1998 and April 2003 where the associations between SEP and health outcomes were examined for children and youth (aged between conception and 18 years). Tables 4.1 and 4.2 present by year of publication, a summary of the types of study designs employed and the age groups examined.

Table 4.1: Number and proportion of studies (N=118) reporting associations between socio-economic position and child or adolescent health, by study design and year of publication.

Study Year	Study Design					Total n (%)
	Concurrent n (%)	Prospective n (%)	Retrospective n (%)	Qualitative n (%)	Intervention n (%)	
1998	12 (80.0)	0 (0.0)	3 (20.0)	0 (0.0)	0 (0.0)	15 (100.0)
1999	13 (56.5)	6 (26.1)	3 (11.3)	0 (0.0)	1 (4.3)	23 (100.0)
2000	14 (82.4)	2 (11.8)	1 (5.9)	0 (0.0)	0 (0.0)	17 (100.0)
2001	19 (54.3)	8 (22.9)	5 (14.3)	1 (2.8)	2 (5.6)	35 (100.0)
2002	14 (63.6)	4 (18.2)	3 (13.6)	0 (0.0)	1 (4.5)	22 (100.0)
2003*	4 (66.7)	2 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	6 (100.0)
TOTAL	76 (64.4)	22 (18.6)	15 (12.7)	1 (0.8)	4 (3.4)	118 100.0)

* January – April 2003 only.

³ References provided in Appendix 1.

Across the five years for which full data were available (i.e. excluding 2003), the mean number of publications per year was 23.6 (SD = 7.1). The majority were descriptive studies that reported associations between SEP and children's health outcomes measured concurrently (n=76, 64.4%), followed by longitudinal studies (n=22, 18.6%) and studies that assessed SEP from retrospectively collected data (n=15, 12.7%). For longitudinal studies, the follow-up periods assessed varied considerably, ranging from 2 months to 15 years (mean = 4.3 years, sd = 4.6 years). Four studies were interventions and there was one qualitative study.

Table 4.2: Number and proportion of studies (N=118) reporting associations between socio-economic position and child or adolescent health by year of publication and age when health outcome was assessed.

Study Year	Age at Assessment of Health Outcome*					
	Pregnancy n (%)	0-2 years n (%)	2-5 years n (%)	5-12 years n (%)	12-18 years n (%)	Not specified n (%)
1998	2 (13.3)	9 (16.1)	7 (23.3)	6 (11.1)	9 (18.0)	0 (0.0)
1999	2 (13.3)	10 (17.9)	6 (20.0)	10 (18.5)	8 (16.0)	0 (0.0)
2000	1 (6.7)	7 (12.5)	2 (6.7)	9 (17.0)	9 (18.4)	1 (14.3)
2001	5 (33.3)	16 (28.6)	7 (23.3)	15 (27.8)	12 (24.0)	4 (57.1)
2002	4 (26.7)	11 (19.6)	6 (20.0)	10 (18.5)	9 (18.0)	2 (28.6)
2003**	1 (6.7)	3 (5.4)	2 (6.7)	3 (5.6)	2 (4.0)	0 (0.0)
TOTAL	15 (100.0)	56 (100.0)	30 (100.0)	53 (100.0)	49 (100.0)	7 (100.0)

* All ages reported were coded. Thus a study which examined outcomes for children aged from birth to six years, was coded as examining three age ranges: 0-2, 2-5 and 5-12. Due to multiple classifications of age ranges, rows cannot be summed to provide the number of studies conducted each year.

** January – April 2003 only.

In the 118 studies, health outcomes were assessed across all age ranges and it was not unusual for studies to report on outcomes across a wide spectrum (spanning more than one of the age groups coded here). As shown in Table 4.2, there was a trend for fewer studies to examine the effects of SEP on health during pregnancy (n=15) or the preschool years (n=30) when compared with toddlerhood (n=56) and older ages (5-12 years, n=53; 12-18 years, n=49). Seven studies were identified where the sample age range was not specified. These were papers that recruited an adult sample and explored the impact of SEP on children's health outcomes, within this context (e.g. the influence of SEP and adult smoking on respiratory illness for any child in the home).

Measurement of Socio-economic Position

Socio-economic position is a complex construct which may be measured in a variety of ways. The indicators of SEP used in the reviewed studies are summarised in Table 4.3. For this analysis, indicators were classified as: individual/parent-level when based on a characteristic of the child's parent/s or ethnicity; family-level when related to family social conditions; or community-level when assessing characteristics of the broader physical and social environment. Within each level of indicator (individual/parent, family and community), all

SEP indicators examined were coded. However, if multiple measures were used to assess one specific type of indicator (e.g. employment measured as mother's employment and father's employment), this was coded only once.

As shown in Table 4.3, across the 118 studies, 222 indicators of socio-economic position were employed on 222 occasions. The table reveals that socio-economic position in these studies was most frequently assessed at the individual/parent level (n=162, 73.0% of all indicators). At this level, Indigenous ethnicity (n=44), parent education (n=32), parent age (n=25) and other ethnicity (n=23) were the most commonly used indicators. Indicators of SEP reported were assessed at the community level 32 times (14.4%). These were measures of rural and remote status and area-level disadvantage. School characteristics was used as a measure of socio-economic position once only, and no other measures of community or macro-environmental socio-economic factors were reported. Family-level measurement of SEP was less common than either individual/ parent-level measurement or community-level measurement. Indicators of family characteristics were reported 21 times in the studies, representing 9.5% of all indicators used. Mostly, this involved measurement of family structure (n=10), and other measures were used quite infrequently.

Table 4.3: Frequency at which socio-economic position indicators, at individual/parent, family, and community levels, were assessed as possible determinants of child or youth health.

Indicator of Socio-economic Position	Frequency (N=222)
Individual and Parent Level	162
Parent occupation	15
Parent employment	8
Parent education	32
Parent income	15
Parent age	25
Child or parent ethnicity – Indigenous	44
Child or parent ethnicity – other *	23
Family Level	21
Financial stress	1
Poverty	2
Welfare recipient	1
Social class	2
Family structure	10
Housing type or ownership	4
Car ownership	1
Community Level	32
Rural and remote residence	17
Area level disadvantage	14
School characteristics	1
Not Specified	7

* Ethnicity defined using a variety of categories e.g. Australian, Asian, European.

We also examined the extent to which studies used multiple measures of socio-economic status, and where multiple indicators were used, whether these typically were measured within the same levels (i.e. were all individual/parent-level or all family-level indicators), or were across levels. This analysis revealed that while the most frequently used approach was that of single indicators, multiple indicators were more likely to be used within the individual/parent level. Of the 106 studies that assessed individual/parent-level SEP, single indicators were used in 67 studies (63.2%), with 25 studies (23.6%) using two indicators, and 14 studies (13.2%) using three or more indicators. In contrast, measurement at the family and community levels involved single indicators only in 13 (81.2%) and 31 (97.0%) of studies respectively, with two indicators being used in three studies (6.3%), and three indicators, in one study (2.1%). Measurement across multiple levels was also relatively rare. Twenty-two studies (18.6%) involved measurement across two of the levels and only three studies (2.5%) involved measurement across all three levels (individual/parent, family and community).

Child and Youth Health Outcomes Assessed

Across the 118 studies reviewed, socio-economic influences were examined in relation to a total of 155 different health outcomes. Table 4.4 shows the number of studies that reported data on SEP and health outcomes, according to health outcomes. Outcomes have been grouped into seven general areas: mortality; birth outcomes and development; physical health – general; physical health – cardiovascular; health behaviours; psychosocial health; and use of health services. The table shows the number of studies that reported outcomes in each area, and also the number of studies that reported specific outcomes within the areas. Some studies reported more than one outcome. For example, in the ten studies that examined SEP effects on mortality, four of these reported all-cause mortality data and seven reported mortality data by specific causes of death.

Examination of Table 4.4 reveals that the health outcomes most frequently examined in relation to socio-economic position were: psychosocial health (24 studies); physical health (22 studies of general health and 16 studies of cardiovascular health); use of health services (19 studies); and birth outcomes and development (18 studies).

The data presented here indicate some health problems that appear to be relatively neglected given their prevalence in the Australian population. For example, respiratory infections are the most common cause of illness for children in developed countries, and the prevalence of these problems has been shown to be related to poor living conditions (Spencer, 1996). In Australia, research has demonstrated links between higher rates of minor respiratory infections, chronic respiratory illness and a range of measures of low social class (Mathers, 1995). In contrast, asthma which is increasing at alarming rates in the Australian population, is believed to show a reverse class gradient, with the highest prevalence amongst Australian children from high socio-economic backgrounds (Peat et al., 1980). This reverse gradient effect has also been reported in overseas studies and for other allergic conditions (Spencer, 1996). As shown in Table 4.4, the socio-economic determinants of respiratory illnesses were examined in seven studies, representing 5.9% of the studies undertaken in the last 5 years. This suggests that the association between social disadvantage and the development of respiratory infections, asthma, and other allergic conditions is being relatively neglected in the Australian context.

Table 4.4: Number and proportion of studies (N=118) examining the association between socio-economic position and health outcomes, by health outcome reported.

Health Outcome	Number (%) Studies	Health Outcome	Number (%) Studies
<u>Mortality</u>	<u>10 (8.5)</u>	<u>Health behaviours</u>	<u>10 (8.5)</u>
All-cause	4	Sun health	1
Specific causes	7	Smoking	7
		Alcohol	2
<u>Birth outcomes/ development</u>	<u>18 (15.3)</u>	Drug use	2
Birth outcomes	9	Sexual health	0
Birth measures	12	Multiple risk behaviours	1
Developmental status	3		
Height/ weight	5	<u>Psychosocial health</u>	<u>24 (20.3)</u>
		Behavioural problems	7
<u>Physical health – general</u>	<u>22 (18.6)</u>	Emotional problems	5
Chronic illness	7	Suicide	4
Acute illness	12	Abuse or neglect	1
Respiratory illness	7	Mental health	0
Cancer	1	Academic adjustment	9
Hearing/ vision	1	Other psychosocial	6
Oral health	2		
Accidental injury	1	<u>Use of health services</u>	<u>19 (16.1)</u>
		Immunisation	2
<u>Physical health – cardiovascular</u>	<u>16 (13.6)</u>	All health services	1
BMI/ Obesity	10	Hospital use	9
Nutrition	4	Preventive health	3
Physical activity	2	Allied/ other health	6
Stress	1		
Other CVD related	1		

Chronic otitis media is a potentially preventable “disease of the poor”, which can have serious long term effects on speech and language development, social development, educational attainment and behavioural adjustment (Jolly, 1990; Spencer, 1996). Despite this, otitis media was examined in only one study reviewed here (middle ear infections).

Cardiovascular disease remains a leading cause of death in Australia, with current rates of early life obesity expected to exacerbate this problem in the future. Childhood obesity is increasingly prevalent. Lifestyle trends towards high consumption of processed foods, combined with reduced levels of physical activity and diminished opportunities for children to engage in physical activity, have been suggested as probable causes of increasing rates of obesity and related conditions. The review revealed a greater attention to the socio-economic determinants of cardiovascular disease risk when compared to earlier reviews (Nicholson et al, 2000). However, obesity was one of the most frequently studied health outcomes (10 studies), and the related factors of diet and physical activity received less attention (four and two studies respectively). In addition, the research effort tended to be concentrated towards the older rather than younger age ranges.

As shown in Table 4.4, the socio-economic influences on psychosocial health have been relatively well-researched in recent years, with 24 studies (20.3%) assessing these outcomes. However, in the area of child abuse and neglect, only one study was identified that examined SEP and abuse or neglect. This lack of research is somewhat surprising given the known associations between disadvantage and injuries (accidental or otherwise) (Jolly, Moller & Volkmer, 1993; Nixon & Pearn, 1978; Nixon et al., 1981), with Indigenous children at especially high risk of abuse and neglect in early childhood (Choo, 1990; Moon et al., 1998).

The Relationship between Socio-economic Position and Child and Youth Health Outcomes

The data presented in Table 4.4 indicate which health outcomes have been examined in relation to socio-economic position. However, these data fail to show the extent to which the research found significant associations between socio-economic factors and health, nor do they indicate the direction of these associations. Typically, it is assumed that socio-economic disadvantage has an adverse effect on health. But this is not always the case and a lack of association or an inverse effect may be found for some health outcomes.

We examined these issues further, as shown in Table 4.5. The table summarises the number of associations between socio-economic position and health that were reported in the 118 studies reviewed, presented according to health outcomes and the type of effect: adverse effect – lower SEP was related to significantly poorer health; positive effect – lower SEP was related to significantly better health; no effect – no statistically significant association between SEP and health. We accepted as evidence of an association, the level of statistical significance used by the authors in each paper, which was typically set at the conventional level of $p < .05$.

Table 4.5: Number and proportion of associations (N=249) reported in the reviewed studies (N=118), showing an adverse, positive or no health effect for low socio-economic position, by health outcome.

Health Outcome	Low socio-economic position associated with			Total N (%)
	Adverse health effect	Positive health effect	No effect	
	N (%)	N (%)	N (%)	
Mortality	16 (94.1)	0 (0.0)	1 (5.9)	17 (100.0)
Birth outcomes/ development	36 (92.3)	1 (2.6)	2 (5.2)	39 (100.0)
Physical health – general	39 (83.0)	5 (10.6)	3 (6.4)	47 (100.0)
Physical health – cardiovascular	14 (66.7)	5 (23.9)	2 (9.5)	21 (100.0)
Health behaviours	10 (76.9)	1 (7.7)	2 (15.4)	13 (100.0)
Psychosocial health	36 (60.0)	9 (15.0)	15 (25.0)	60 (100.0)
Use of health services	38 (73.1)	6 (11.5)	8 (15.4)	52 (100.0)

As shown in Table 4.5, across the 118 studies reviewed, 249 associations were reported between an indicator of socio-economic position and a health outcome. In the majority of cases (n=189, 75.9%) socio-economic disadvantage was associated with poorer health outcomes. Generally consistent adverse effects were reported across studies of: mortality; birth and developmental outcomes; general physical health; and health risk behaviours, where between 77% and 94% of reported associations were adverse effects.

Socio-economic disadvantage was reportedly associated with positive health gains in 10.8% of associations, and there were no significant effects for 13.3%. The specific health outcomes for which there were more frequent reports of adverse or no effects were respiratory illness and BMI/obesity. For respiratory illness, two of the seven reported associations were positive (29%) and one was not significant. For BMI/obesity, four out of thirteen associations (31%) were positive and two (15%) were not significant. In addition, mixed results were reported across a range of psychosocial health outcomes, with 9 (15%) of the 60 associations being positive and 15 (25%) non-significant.

The extent to which the associations between SEP and health outcomes varied by the type of SEP indicator used, was also examined. This revealed some differences by type of indicator. Indicators that were most consistently reported as having an adverse effect on health were parent employment, parent age, Indigenous ethnicity, and area-level disadvantage. Housing type, financial stress and welfare receipt were measured relatively infrequently, but also showed a consistent relationship with poor health. Positive health effects were more frequently reported for the parent-level indicators of occupation, education, income and Indigenous ethnicity (compared to other indicators). Non-significant effects were found mainly for

community-level indicators. This is not surprising as such measures are relatively unreliable indicators of an individual's socio-economic position.

4.4 Discussion

This review identified 118 journal publications that examined the health effects of socio-economic disadvantage for children and young people. The mean publication rate was 23.6 (SD = 7.1) per year. In an earlier review of Australian health inequalities research across all age groups, Turrell and colleagues (1999) reported an annual publication rate of 6.9, with an upward trend over time. In our secondary analysis of their findings related to early childhood (Nicholson et al, 2000), we found a total of 42 journal articles examining health inequalities across early childhood (conception to age 4 years), representing an annual publication rate of 1.5. While these results are not directly comparable with the current review due to methodological differences, they suggest that there has been a significant increase in research attention to this area over the last five years.

There was also evidence of a greater diversity of research designs being used compared to past reviews (Nicholson et al, 2000; Turrell et al, 1999). A greater proportion of the studies reviewed here employed longitudinal designs, although intervention studies continued to remain relatively rare.

The review revealed a lack of measurement sophistication with respect to SEP. This construct was most typically measured using single indicators, and there were few studies that employed measurement across multiple contextual levels. Given the complexity of our current models of socio-economic influences on health, more attention to multiple measures, especially multi-level measurement, appears warranted.

The most common health outcomes examined in relation to SEP were psychosocial health, physical health (including cardiovascular health), the use of health services, and birth outcomes and development. These results contrast with the previous review of Australian early childhood health inequalities research (Nicholson, Tually & Vimpani, 2000), where psychosocial and general physical health were identified as neglected areas. However, consistent with the past evidence, respiratory infections, asthma and other allergic conditions, otitis media, diet and physical activity (especially in younger age groups) and abuse or neglect were relatively under-researched given their current prevalence in the Australian population.

Finally, the review examined whether adverse, positive, or non-significant associations were reported according to health outcomes and the measures of SEP employed. While the studies as a whole provided clear evidence that poor socio-economic circumstances are associated with worse health, there was some variability by health outcome and by SEP indicator. These findings highlight the need to be cautious in assuming that health outcomes are universally poorest for the most disadvantaged. Importantly however, the findings also highlight the need to collect data using multiple indicators of socio-economic position if we are to better understand the specific pathways and mechanisms involved in differential health outcomes.

Some limitations of this research need to be acknowledged. The first relates to the publication bias and our use of abstracts as a principal source of information for coding effects. It is well known that it is easier to publish significant findings as opposed to an absence of effects. It is also true that authors highlight their significant or unique findings when writing word-limited abstracts. Thus it is likely that our analyses here under-report the occurrence of ‘no effects’.

In addition, the associations reported here include both the simple bivariate associations reported in some studies, and the multivariable analyses undertaken in other studies. In the case of multivariable analysis, associations between SEP indicators and health may have been significant at the bivariate level, but were no longer significant when adjusted for the effects of other measures (which may include other SEP indicators). These differences in approaches were not able to be examined in the work undertaken here. Further research examining each study more closely and calculating effects sizes would provide a better understanding of the influence of SEP on health outcomes.

Given these limitations, the conclusions from these final analyses are necessarily modest – that there is a generally consistent picture indicating that SEP often has an adverse impact on a range of health outcomes for children and young people. However, positive effects are also reported for some outcomes, and effects may vary with the type of indicator used. Our understanding of this area would be enhanced by future work, such as a meta-analysis, to unpack the complexities of these relationships and provide an estimate of effect sizes.

5. Developments in Australian Child and Youth Health Research and Policy

While the data presented in Section 4 suggest that child and youth health inequalities research has increased in Australia, it is not clear to what extent this is translating into actions that will make a difference to the health of the more disadvantaged members of society. As noted by Turrell and colleagues in their 1999 review of Australian Health Inequalities research:

“It is not merely a question of creating a critical mass of Australian research... Rather, a strategic approach [is needed that] will underpin and build the capacity required to develop effective policy initiatives, education campaigns, health promotion programs and other approaches that will make a difference to the health of Australians who live in disadvantaged communities and belong to disadvantaged groups” (Turrell et al., 1999, p.xii).

Since the publication of Turrell’s report, a number of developments have occurred within Australia that address either directly or indirectly the strategic development of capacity in the area of child and youth health inequalities. In this final section, we briefly describe some recent national initiatives that involve a focus on Australian children and youth⁴. The six initiatives described, were selected for inclusion on the basis that they were: national multi-disciplinary or cross-sectoral initiatives; involved ongoing activities for a period of at least three years; and included a focus on children and youth and health inequalities. It was not possible in this document to summarise the significant contributions to the field that are also being provided by a number of state-based research groups and service-providers, or the policy developments occurring within individual state and federal departments. However, it is recognised that these form a large part of the picture of what is being done nationally to address health inequalities among children, young people and their families.

5.1 National Agenda for Early Childhood

In September 2002, the Minister for Children and Youth Affairs announced that the Australian Government would begin development of a *National Agenda for Early Childhood*. The National Agenda recognises the critical importance of the early years of life for the future health and wellbeing of the nation, and that support for children and families is the responsibility of multiple federal, state and local agencies. As such, the Agenda will focus on early child and maternal health, early learning and care, and supporting child-friendly communities. It will provide directions for a whole-of-government, coordinated approach for future investment in early childhood, identifying objectives and priorities within the key areas.

⁴ While we do not describe the Health Inequalities Research Collaboration here (it was described briefly in Section 1), this is clearly a very important arm of the national activity to build capacity in strategic health inequalities research and practice in Australia. Its activities in the area of childhood and adolescent health inequalities are evidenced through the two-year funding (2002-2003) provided for the activities of the Children, Youth and Families Research Network, including two commissioned research reports (this report and the forthcoming report on home visiting interventions).

The development of the National Agenda is being undertaken by the Australian Government Task Force on Child Development, Health and Wellbeing, which is coordinating the whole-of-government approach. Departments and agencies represented on the Task Force include:

- Australian Government Department of Family and Community Services;
- Australian Government Department of Health and Ageing;
- Australian Government Department of Education, Science and Training;
- Attorney-General's Department;
- Australian Government Department of Immigration and Indigenous and Multicultural Affairs;
- Aboriginal and Torres Strait Islander Commission;
- The Commonwealth Treasury;
- Australian Government Department of Finance and Administration; and
- Australian Government Department of Prime Minister and Cabinet

Progress to date has included the release and dissemination of an initial consultation paper (Australian Government Task Force on Child Development, Health and Wellbeing, 2003a). This was followed by a call for submissions, and a series of national, state, regional and Indigenous consultations and parent-focus groups undertaken during 2003. These processes indicated a widespread and strong support for the idea of the National Agenda (Australian Government Task Force on Child Development, Health and Wellbeing, 2003b).

Based on the work undertaken to date it appears likely that objectives and strategies to address early childhood health inequalities will be featured strongly in the National Agenda. Health inequalities were highlighted in the initial consultation paper, and it is anticipated that this theme will be cross-cutting through the Agenda.

5.2 The Australian Research Alliance for Children and Youth (ARACY)

The *Australian Research Alliance for Children and Youth (ARACY)* was officially launched in July 2002 with Professor Fiona Stanley from the Telethon Institute for Child Health Research (WA) as Chief Executive Officer. This initiative grew out of meetings in 2001 of individuals from a range of child- and youth-focused organisations who shared concerns about the adverse trends occurring in child and youth health and wellbeing in Australia:

*“In spite of Australia's increasing wealth and generally high level of education, we are witnessing adverse trends in developmental health and wellbeing amongst children and adolescents, including increased inequalities in health, educational and many other outcomes.”*⁵

⁵ From the ARACY website: <http://www.aracy.org.au/>

The Alliance is described as:

*“... a new venture: a national collaboration of researchers, policy makers and practitioners from a broad range of disciplines who are together building a better future for Australia's children and young people ... [It involves] Leaders in early childhood and adolescent development, paediatrics, epidemiology, education, youth justice, the social sciences, population statistics, and economics [who] have joined forces with top-level policy makers, service providers and others to form this Alliance. Through this collaboration the nation's considerable expertise, talent and resources is being harnessed to generate and translate knowledge to enhance the well-being and life chances of children and young people.”*⁵

The governance structure and national office for ARACY were established during 2002, funding has been secured for administration and management activities, a membership registration system has been implemented, and communication processes established. Several areas of activity that are underway include:

1. *The Alliance Clearinghouse* will be established as a key tool for disseminating research knowledge in order to influence and inform evidence-based decision-making in policies and service practices. This work commenced with a feasibility study that investigated the extent of stakeholder support for a clearinghouse, and to determine an operational model. The results of the feasibility study are due for release in August 2004.
2. *A National Integrated Data Network* which will aim to facilitate the sharing of research information and maximise the use of research and datasets to forecast health and developmental outcomes and to promote the use of effective interventions. In May 2004, this work was progressed at a meeting co-hosted by ARACY and the Queensland Office of Economic and Statistical Research. The Australian Bureau of Statistics is taking a leading role in future development of the data network.
3. *A Consensus Research Agenda* will be developed to provide recommendations regarding key policy, practice and research issues and to facilitate funding and work in priority areas. A series of national meetings and consultations have been undertaken to inform the development of the agenda which is due for release in late 2004.
4. *A Communications Strategy* is being developed that will underpin the activities of the organisation and further ensure that research findings are accessible to a variety of audiences. In addition, a Collaboration Working Group has been established to develop models of good practice in collaboration.⁶

⁶ From the *Alliance Update*, July 2004.

5.3 Child and Youth Health Intergovernmental Partnership (CHIP)

The *Child and Youth Health Intergovernmental Partnership (CHIP)* has been established as a committee of the National Public Health Partnership with Professor John Catford and Mr Andrew Stuart as Co-Chairs. CHIP is an intergovernmental forum for national leadership and coordinated effort in child and youth public health. The terms of reference are to:

1. Act as an intergovernmental forum for national leadership and coordinated effort in child and youth public health.
2. Promote effective, efficient and equitable public health interventions for children and youth with particular attention to the issues for Aboriginal and Torres Strait Islander peoples and the disadvantaged.
3. Facilitate approaches to support and strengthen engagement with other disciplines and sectors to enhance health, including mental health, development and wellbeing outcomes for children and youth.
4. Facilitate the development of a national public health strategy and action plan focusing initially on early childhood and related maternal and family health issues, in consultation and collaboration with key stakeholders and building on related national frameworks and strategies.
5. Report and make recommendations to the National Public Health Partnership Group.⁷

In addition, CHIP will support and provide advice on health issues to the National Agenda for Early Childhood (see 5.1 above).

A key activity being undertaken by CHIP is the development of an evidence-based National Public Health Action Plan for Children 2005-2008. The Action Plan will aim to strengthen the capacity of the health sector and wider community to respond to public health issues affecting children aged 0-12 years, and to provide a response framework for emerging child public health issues (National Public Health Partnership (NPHP), 2004). The Action Plan will link strategic efforts across the various settings and systems that influence the health of children, and will include ways to enhance the promotion of child public health interventions and address engagement across disciplines, national groups and projects. It will also identify key areas for development, new health gains and capacity building, with a broad focus on prevention and early intervention. Inequalities in children's health, including Aboriginal and Torres Strait Islander child health issues, will be an explicit focus of this work and opportunities to address health inequalities will be emphasised (Green, 2003; NPHP, 2004).

CHIP released an initial consultation paper to stimulate discussion about what should be included in a National Action Plan (NPHP, 2004) and conducted a series of national consultations around this paper in August 2004.

⁷ From the CHIP website: <http://www.nphp.gov.au/workprog/chip>

5.4 Growing Up in Australia – the Longitudinal Study of Australian Children

In March 2002, the Australian Government Department of Family and Community Services announced the commencement of *Growing Up in Australia – the Longitudinal Study of Australian Children (LSAC)* (Nicholson et al., 2003; Sanson et al., 2002). The study is being implemented by a large multi-disciplinary research consortium with the Australian Institute of Family Studies as the lead agency. It will track the health and development of two national, population-representative cohorts of 5,000 children each, recruited in their first and fourth years of life respectively. LSAC will assess a broad range of individual, family and environmental determinants of health and wellbeing, with a focus on identifying the factors that influence children's trajectories towards good and poor lifecourse outcomes. Specifically, it will address the following key research questions, as determined by the Department:

1. How well are Australian children doing on key developmental outcomes?
2. What are the pathways markers, early indicators, or constellation of behaviours that are related to different child outcomes?
3. How are child outcomes interlinked with their wider circumstances and environment?
4. In what ways do features of children's environment (such as families, communities, and institutions) affect children's outcomes?
5. What helps maintain an effective pathway, or change one that is not promising?
6. How is a child's potential maximised to achieve positive outcomes for children, their families and society?
7. What role can government play in achieving these outcomes? (Nicholson et al., 2003).

A series of discussion papers outlining the aims and design of the study are available from the LSAC website.⁸ Piloting was completed in 2003, recruitment of the two cohorts commenced in 2004, with data collection due for completion by September. It is anticipated that the data set will be available for analysis in April 2005. LSAC represents a significant government investment in longitudinal research. It includes measures of social disadvantage across the individual, family, and community contexts, as well as measurement of a range of health, academic and social outcomes. In addition, the study involves a close relationship between the research team and the Department which will help to ensure that the data collected have direct policy relevance, and that government will be aware of findings and able to act on them as they emerge. Thus, the study has considerable potential both for generating new knowledge about the early life impact of social disadvantage, and for facilitating the translation of that knowledge into health, family and social policy responses.

⁸ <http://www.aifs.gov.au/growingup/>

5.5 National Investment for the Early Years (NIFTeY)

The *National Investment for the Early Years (NIFTeY)* emerged from the outcomes of a workshop of academics, practitioners and government officials held in Canberra in March 1999 convened by Professor Graham Vimpani. Around 70 people from many sectors concerned about the wellbeing of children within the context of their families and communities attended this workshop. Participants endorsed a proposal that a major initiative focusing on the first three years of childhood should be launched to coincide with the first three years of the new millennium.

NIFTeY has four broad objectives:

1. To promote the development, implementation and evaluation of strategies in the early years of life that advance the health, development and wellbeing of all children in Australia.
2. To advance community knowledge and the education and support of parents in relation to the importance of the first three years of a child's life so as to promote the social, cognitive, emotional and physical well-being of all children.
3. To encourage the provision of resources and services to communities and families where children are known to be disadvantaged.
4. To promote and disseminate research relevant to the early years of life including monitoring the status of young children.⁹

NIFTeY has a broad multi-disciplinary membership across Australia with strong policy and practitioner representation. Its major activities include an active email discussion list, distribution of newsletters (providing information on publications, research developments, policy initiatives, events, news releases and other resources), provision of updates to members on Australian and international research, practice, and policy developments relevant to the early years of life, and sponsorship of visiting speakers, conferences and professional development workshops. NIFTeY has proved to be a sustainable network, maintaining a large and active membership since its inception. The broad membership base is helping to ensure communication across a range of sectors and professional groups that typically have had limited interaction.

5.6 Public Health Education and Research Program (PHERP) Innovations Projects

Commencing in 2002, the Australian Government Department of Health and Ageing has allocated special funding from its Public Health Education and Research Program (PHERP) to support innovative programs of work that will build capacity in public health education and research. Two programs funded through this scheme that involve national partnerships and explicitly address childhood and youth health inequalities are described.

⁹ From the NIFTeY website: <http://www.niftey.cyh.com/>

The Socio-economic Health Inequalities Project (2002-2004)¹⁰

This PHERP funded initiative is headed by Dr Gavin Turrell from the Centre for Health Research (Public Health) at Queensland University of Technology. The project involves a consortium of national partners from the Australian Bureau of Statistics, the Australian Institute for Health and Welfare and the National Centre for Epidemiology and Population Health at the Australian National University, along with international advisors from the Netherlands, New Zealand and the United States. The project has three broad objectives:

1. *To research and develop standardised procedures for measuring socio-economic position.* The purpose of this component of the program is to develop a set of standardised procedures for measuring SEP that could be used to inform future data collections. It is envisaged that this work will provide a foundation for enabling more effective comparisons within and across monitoring data sets and research studies.
2. *To document the nature and extent of socio-economic health inequalities in Australia.* This component has commenced with an examination of socio-economic mortality inequalities during the period 1998-2000, and documenting changes in the direction and magnitude of these inequalities across the 1980s and 1990s. This work is being expanded to include consideration of socio-economic inequalities in morbidity, health-related behaviours, risk-factor prevalence, and health-service utilisation.
3. *To assist the development of Australia's research capacity and infrastructure as these relate to health inequalities and the social determinants of health more generally.* This component involves establishing the mechanisms and processes necessary to strengthen and enhance Australia's research capacity and infrastructure vis-à-vis socio-economic health inequalities and the social determinants of health.

Work on this project commenced in 2002 and significant progress has been made with respect to the three program aims. The program's early achievements were presented at a national conference on health inequalities in November 2002 (held as part of QUT's 2002 International Health Summer School)¹¹. Three major reports documenting trends in national mortality inequalities, national morbidity inequalities, and the measurement of health inequalities respectively, are due for release in the second half of 2004.

2. The Lifecourse Perspectives on Health Project (2003-2005)¹²

This project led by Dr Jan Nicholson and Professor Beth Newman at the Centre for Health Research (Public Health) at Queensland University of Technology, involves a national consortium of researchers from the Australian National University (National Centre for Epidemiology and Population Health and the Centre for Mental Health Research), Curtin University and the Telethon Institute for Child Health Research, the University of Melbourne and the Murdoch Children's Research Institute, and the University of Newcastle and the Newcastle Institute for Public Health. The project aims to build capacity across the workforce

¹⁰ The full title for this project is: Strengthening and Extending Australia's Research Capacity and Infrastructure as these Relate to Socio-economic Health Inequalities

¹¹ Conference proceedings, including summaries and copies of presentations are available on request from Dr Gavin Turrell at QUT.

¹² Full title for this project is: A Life-course Perspective on Health and Wellbeing: Strengthening and Extending the Population Health Workforce and Australia's Research Capacity

to enable a greater use of lifecourse perspectives in public health education, research and practice.

This will be achieved through two areas of activity:

1. *Enhancing workforce capacity through education and training in life-course perspectives.* This component of the project has commenced with a scan of public health curricula offered at undergraduate and postgraduate levels. Gaps and needs have been identified, and flexible delivery modules will be developed to meet these needs. The first set of life-course modules are currently under development as an undergraduate elective unit to be offered at the University of Newcastle in Semester 1 2005. This will be evaluated, revised and disseminated for wider use.
2. *Enhancing research capacity through improving access to appropriate tools for assessing life-course influences on health and health interventions.* A major project being undertaken to meet this objective is the development of a web-based measurements library. This will provide all the relevant information required by Australian researchers to enable the selection of appropriate standardised scales and items for use in health research with children, youth and families. A number of measurement development and validation studies are also being undertaken to address areas where appropriate Australian measurement tools are lacking. This includes studies of new data collection methods, such as the collection of cortisol from infants and children (being undertaken at the National Centre for Epidemiology and Population Health).

This PHERP project commenced in 2003. An overview of the project and early progress were presented at a conference convened by the Department in May 2003. A three-day conference on life-course approaches to health and a two-day workshop on analytic methods for longitudinal research were conducted in November 2003. A range of other activities are ongoing.

5.7 Summary

While the aims and activities of these initiatives overlap in some areas, each has a unique focus. The origins of the partnerships and programs of activity that underlie several of these initiatives can be traced back to the Vimpani workshop held in Canberra in 1999. The workshop brought together a broad range of participants from across multiple sectors, and the enthusiasm and shared vision that resulted has had a significant impact on Australian child and youth health research and policy developments since this time. The views formed at this meeting were further reinforced by a series of Australian tours in 2000-2002 by leading international figures in the field including Professors Fraser Mustard, Clyde Hertzman and Daniel Keating.

Collectively, these programs and networks are contributing in varying ways to the development of capacity amongst Australian professionals working with children, youth, and families. The activities being undertaken that are relevant to child and youth health inequalities include:

- collecting policy-relevant data, especially longitudinal data;
- initiating more systematic approaches to the collection of monitoring data nationally;
- increasing the availability of standardised, validated instruments for use in Australian child, youth and family research;
- undertaking a range of activities to collate existing research to provide an evidence-base for future policy and practice;
- contributing to the development of national policies, strategies and action plans, informed by Australian evidence;
- providing education and training to researchers, policy makers, practitioners and the broader community (including parents); and
- developing a range of network and communication strategies to better link and inform diverse professional groups and the public.

These activities illustrate the increased attention within Australia to issues related to child, youth and family health and health inequalities. They represent a considerable harnessing of efforts across discipline groups and between researchers, policy makers and practitioners, with an explicit multi-disciplinary focus. Common to these initiatives are shared perspectives on the multiple determinants of health and concerns about the impact of socio-economic inequalities on the health and wellbeing of vulnerable Australians. In addition, several of the initiatives are focussing on what may be regarded as relatively unattractive or non-prestigious work. For example, activities in the research area include building resources and capacity through such things as measurement validation work, development of measurements libraries, data linkage feasibility studies, secondary analyses of national datasets and warehousing of data and research findings. These time and resource intensive activities deserve ongoing funding support due to their acknowledged potential for enhancing the quality of Australian research.

As argued by Professor Fiona Stanley, the pathways to better population health and social justice lie in multi-disciplinary research and policy partnerships which will allow us to

“investigate the social and ecological contexts in which causal pathways arise, develop better measures and analytical methodologies, ... expand and link large population databases to better serve a causal pathways approach, and plan longitudinal studies carefully to enable multiple and interacting pathways to be studied.” (2002, pp.42-43).

Several of these goals are now starting to be addressed. As indicated, many of these initiatives are in the early phases of development and their full potential and benefits may not be evident for some time. However, collectively they represent a promising groundswell of national activity and focus, and it appears that we will be much better positioned in the future to develop evidence-based policies and practices to enhance the health and wellbeing of children and youth.

6. Conclusions: Progress in Child and Youth Health Inequalities Research

The population data reviewed in the early sections of the report reveals that certain children and young people are at risk of adverse health outcomes due to their socio-economic circumstances. Up to 25% of all Australian children and young people (and up to 59% of those living in lone parent families) currently experience disadvantaged social circumstances. The impact of these inequalities on the health of Australian children and young people is clearly illustrated by the mortality data. Area-level socio-economic disadvantage was associated with a one- to three-fold increased risk of early life mortality, and Indigenous ethnicity and geographical remoteness were associated with a two- to four-fold increase risk of mortality. Examination of mortality by area-level disadvantage over time reveals that early life mortality rates have dropped from the mid-1980s to mid-1990s and these reductions were evident for those from both the least and most disadvantaged groups. For children aged 0-14 years and females aged 15-24 years, there was also a reduction in absolute differences between the least and most disadvantaged. However for males 15-24 years, the absolute differences increased. Relative differences in all cause mortality as expressed by rate ratios, indicate that inequalities by area-level disadvantage are persisting.

As has been noted elsewhere (e.g. Australian Government Task Force on Child Development, Health and Wellbeing, 2003; NPHP, 2004; Stanley, 2002), the elevated rates of mortality for children and young people of Indigenous origin are a cause for concern, as are the mortality inequalities associated with suicide and injury for rural and remote children and young people. These data suggest that much greater efforts are required if Australia is to provide a healthy start to life for all children and young people.

Research that develops new knowledge about the causes of health inequalities, is essential for informing Australian practitioners, service providers and policy makers about the optimal ways for reducing health inequalities. The status of health inequalities research has been reviewed a number of times in the past. Key reports include those by Jolly in 1990 prepared for the Australian College of Paediatrics, a Commonwealth Department of Health report published in 1993, and the review by Turrell and colleagues (1999). The priority research areas recommended by each of these reports are summarised Table 6.1. This shows that similar major gaps were identified by each report, and over the 10-year period from 1990 and 1999, little had changed.

In contrast, the review undertaken here revealed a more positive picture. Specifically, it concluded that: the quantity of health inequalities research related to children, youth and families has increased over the five year period since the report by Turrell and colleagues; attention has been paid to a broad range of health outcomes, spanning all developmental periods from conception to age 18 years; and while intervention studies remain relatively scarce, there appears to be an increase in longitudinal research. In addition to the research activities, a number of national initiatives were identified which have the potential to generate new knowledge, facilitate the transfer of such knowledge, and support its application and implementation, with the aim of reducing health inequalities.

Table 6.1: Health inequalities research priorities identified in past Australian reviews.

	Jolly (1990)	Dept of Health* (1993)	Turrell et al. (1999)**
Australian research	✓	✓	✓
National databases		✓	✓
Longitudinal research	✓	✓	✓
Analytic research	✓		✓
Context and measurement issues	✓	✓	✓
Special populations	✓	✓	✓
Psychosocial factors	✓	✓	✓
Health service utilisation	✓	✓	✓

* Department of Health, Housing, Local Government and Community Services Research Advisory Committee, 1993.

** Recommendations also confirmed in our reanalysis of the Turrell data for early childhood, as reported in Nicholson et al., 2000.

However, several areas were identified that still require attention. In the research arena, these included: further improvements in the measurement of SEP and greater use of multiple indicators, spanning multiple levels of influence; more research into health inequalities and respiratory illnesses, otitis media, nutrition and physical activity (especially in the early years), and child abuse and neglect; more intervention research and a greater focus on Indigenous children and young people, and on those living in rural and remote areas.

Past reports have also highlighted a number of limitations in Australia's capacity to research and intervene to alter health inequalities (e.g. Nicholson et al., 2000; Turrell et al. 1999). It is clear from the national initiatives summarised here, that several programs of activity are now underway that are tackling these capacity deficits. Underlying these initiatives are shared concerns about health inequalities and a shared perspective on the importance of ecological, lifecourse approaches to health determinants research. Through the development of national, multi-disciplinary partnerships linking researchers, practitioners and policy makers, these initiatives offer a considerably more positive future. It appears that Australia is currently in a stronger position than ever before for advancing this field of work to the potential benefit of vulnerable children, youth and families.

Despite this relatively positive assessment of the current status of Australian research into childhood and adolescent health inequalities, a final cautionary comment is warranted. As noted by Turrell and colleagues in 1999:

“Importantly, it will only be possible to achieve such a coordinated research effort in the SES and health area with the highest level of political and bureaucratic

leadership that prioritises this as one of our most significant public health challenges into the next millennium. Without this sort of leadership and commitment, it will not be possible to fund, develop and sustain the critical mass of R&D activity that will be required to really make difference to the socio-economic health inequalities in this nation over the next generation” (Turrell et al., 1999, p.xii).

There are indications of a strong current political commitment to the health inequalities agenda. These are evidenced by the establishment of HIRC, the work towards the National Agenda for Early Childhood and the activities of the Child and Youth Health Intergovernmental Partnership. However, the continuation of such initiatives inevitably can be threatened by changing political circumstances and perceived financial imperatives.

It is to be hoped that the adverse impact of socio-economic disadvantage on Australian children and young people (and therefore on Australia’s future) has attained sufficient recognition and support across all levels of government and the community, to be able to withstand any future changes in political and policy agendas. It is also hoped that this area will continue to attract the resources and the advocacy for social changes that are required to make a difference for the health benefit of all Australian children and young people.

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APPENDIX 1: Studies Included In Systematic Literature Review

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