Australian Bureau of Statistics

INSTITUTE FOR
Child
Health Research

Western Australian Child Health Survey

DEVELOPING HEALTH & WELL-BEING IN THE NINETIES











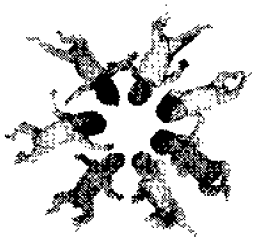

BS Catalogue No. 4303.5

Catalogue No. 4303.5

March 1995

Western Australian Child Health Survey

Developing Health and Well-being in the Nineties



INSTITUTE FOR
Child Health Research

P. C. Kelly
Deputy Commonwealth Statistician
and Government Statistician for Western Australia

CITATION

The following citation should be used when reproducing or quoting any part of this publication:

Zubrick SR, Silburn SR, Garton A, Burton P, Dalby R, Carlton J, Shepherd C, Lawrence D. *Western Australian Child Health Survey: Developing Health and Well-being in the Nineties.* Perth, Western Australia: Australian Bureau of Statistics and the Institute for Child Health Research, 1995. (ISBN 0 642 20754 2).

ACKNOWLEDGMENTS

This publication was a collaboration between the Institute for Child Health Research (ICHR) and the Australian Bureau of Statistics (ABS).

The production team comprised:

ICHR
Stephen Zubrick, Head, Division of Psychosocial Research
Sven Silburn, Consultant Clinical Psychologist
Alison Garton, Senior Research Psychologist
Paul Burton, Biostatistician

ABS
Jeff Carlton, Project Leader, National Youth Statistics Unit (NYSU)
Robin Dalby, Project Manager, NYSU
Carrington Shepherd, Research Officer, NYSU
David Lawrence, Survey Methodologist, Statistical Support Unit

The authors wish to thank the 1,462 Western Australian families and the principals and teachers in 413 Western Australian schools for agreeing to participate in this study.

Special thanks to Rod Brown (ABS) who managed all aspects of the field survey administration and coordination, and to the 27 ABS interviewers who conducted the interviews.

The Western Australian Child Health Survey could not have been conducted without the assistance of:

Thomas Achenbach, David Axworthy, James Baker, Greg Black, Carol Bower, Heather Brown, Joan Buckham, Ann Callahan, Janet Clinton, Rob Condon, Hugh Cook, Judy Crooke, Bob Culleton, Cary Drake-Brockman, Don Edgar, Linda Flavell, Trish Fullarton, Carol Garfield, Ellis Griffiths, Michael Hagan, Barbara Henry, Judith Henzell, Claudia Hoeltje, D'arcy Holman, Melanie Honnor, June Jones, Roderick Kefford, Slav Kostov, Kati Kraszlan, Laraine Kroll, Jennifer Kurinczuk, Dennis Ladbrook, Lou Landau, Terry Lewis, Vera McKenzie, Tony Minchin, Barbara Moore, Patricia Morich, Hoan Nguyen, David Offord, Ruth Phillips, Beverley Raphael, Anne Read, David Reiss, Michael Resnick, Suzanne Robertson, Ian Rouse, Michael Sawyer, Rozanne Silburn, Peter Skehan, Peter Sly, Ian Smith, Geoff Smith, Fiona Stanley, Rose Stocker, Melissa Vernon, Bev Vickers, Richard Wilkes, Ted Wilkes, and Ken Wyatt.

ISBN 0 642 20754 2

FOREWORD

This is one of the first Australian surveys to specifically address mental health and well-being as part of the overall picture of child and adolescent health. The realisation of the importance of child mental health problems as an increasing cause of morbidity and its costs to families and society generally, together with the importance of obtaining good data to gauge the real size of the problems, what their concomitants are and so guide policy makers, were strong motivations for this outstanding survey.

The Institute's collaboration with the Australian Bureau of Statistics has provided a unique snapshot of Western Australian children, families and their health. For the first time we have a statistically sound picture of the social and demographic make-up of Western Australian families who have children, their physical and mental health and disabilities, together with descriptions of the social environments which may contribute to the significant levels of problems identified.

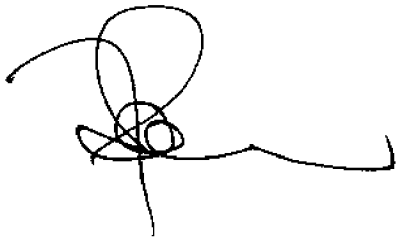
The findings highlight complex environmental, biological and behavioural influences that impact upon the health of today's children and young people. Finding ways to respond appropriately to their changing needs requires wide-ranging and well-informed public discussion. Wherever the findings permit, suggestions for future directions and prospects for prevention are highlighted, making this essential reading for all who seek to promote the health and well-being of children and adolescents.

The increasing importance of social and behavioural factors which both positively and negatively influence child and adolescent problems, and the enormous importance of both good family functioning and supportive educational systems for nurturing our young people are clear messages for our families, communities, governments and other relevant agencies.

I would most particularly like to acknowledge the support given by parents and schools involved in the survey. Their exceptional response is an indication of the importance which the community places on the health and development of their children.

The response from both government and non-government sectors to the planning and implementation of the survey has also been overwhelmingly positive. For example, all State government departments with specific interests in children or the family provided input into the development of the study questionnaires. I believe that this capacity in Western Australia for such an intimate relationship between researchers and the community is the essence of our success in research, and in utilising research results appropriately and rapidly.

We in the Institute for Child Health Research believe the Western Australian Child Health Survey to be a flagship project for Western Australia. The study design and instrumentation has already been sought from Canada and the United Kingdom where similar studies are planned. This first volume from the survey will be followed by two more volumes produced in conjunction with the Australian Bureau of Statistics. One will focus on family and community health, the other on health and education. I hope these findings will be read widely and used wisely by those who care for families, children and young people in Australia and elsewhere.



Dr FIONA STANLEY
MBBS MSc, MD, FFPHM (UK), FAFPHM, MFCCH, FRACP (Hon)

Director, Institute for Child Health Research
Professor of Paediatrics, University of Western Australia

CONTENTS

ABOUT THIS PUBLICATION

Attributable comments

Western Australian Child Health Survey: Developing Health and Well-being in the Nineties is a joint publication between the Institute for Child Health Research (ICHR) and the Australian Bureau of Statistics (ABS).

The views expressed in this publication relating to the implications of Survey findings for future directions in public health are those of the ICHR and are not necessarily those of the ABS.

Related publications

This publication is the first of three from the Western Australian Child Health Survey planned for release in 1995. Publications to follow will examine *Family and Community Health* (Catalogue No. 4304.5) and *Education and Health* (Catalogue No. 4305.5).

Children

Throughout this publication, the term 'children' refers to persons aged 4 to 16 years at the time the Survey was conducted. Unless otherwise stated, the data refer to 4 to 16 year-old children.

Caregiver/parent

The Western Australian Child Health Survey directed a large proportion of its questions at children's principal caregivers. Given that the principal caregiver was almost always a parent of the child, the terms 'caregiver' and 'parent' are often used interchangeably throughout this publication.

Symbols and other usages

*	relative standard error between 25 and 50 per cent
**	relative standard error of 50 per cent or more. See Appendix B – Technical Notes.
..	not applicable
-	nil or rounded to zero
p	preliminary

For more information about data contained in the following text and tables, please refer to the Glossary at the end of this publication.

Inquiries

- *for further information* contact Robin Dalby at the National Youth Statistics Unit of the ABS on (09) 360 5149, or the Division of Psychosocial Research at the Institute for Child Health Research on (09) 340 8533.
- *for information about other ABS statistics and services* please refer to the last page of this publication.

INTRODUCTION

The 1993 Western Australian Child Health Survey, a large scale epidemiological survey of the health and well-being of Western Australian children, was undertaken by the Institute for Child Health Research. The study was funded by Healthway (the Western Australian Health Promotion Foundation), the Australian Rotary Health Research Fund, the Health Department of Western Australia, and the State Statistics Committee.

THE INSTITUTE FOR CHILD HEALTH RESEARCH

The Institute for Child Health Research is a centre of excellence for the conduct of research in child health. Founded in 1987, the Institute's research programs include the study of asthma and allergic disease, birth defects, child and adolescent mental health, childhood death and disability, leukaemia and other cancers, and Aboriginal health and infectious disease.

The Institute's mission is to improve the health of children through the development and application of research into:

- causes of ill health;
- the maintenance of good health;
- prevention of ill health; and
- the treatment of conditions affecting children.

SURVEY OBJECTIVES

The Survey's primary objectives are to define priority targets for existing health, education and social services, and to build an epidemiological knowledge-base from which preventive strategies can be developed to facilitate the social, emotional, academic and vocational competency of young people. A notable feature of this Survey is its emphasis on identifying the developmental and environmental factors which enable and develop adolescent competency, resiliency and employment readiness.

The specific aims of the study are to:

- Estimate the prevalence and distribution of mental health problems in Western Australian children aged 4 to 16 years;
- Estimate the prevalence and distribution of other chronic medical conditions and limitations and how they contribute to mental ill-health and reduced function;
- Estimate the prevalence and distribution of adverse health behaviours (e.g. smoking, alcohol and drug misuse, and unprotected sexual activity);
- Describe children's use of health care, education, juvenile justice and social services;
- Develop estimates of risk and markers identifying children at increased risk for various health, educational and vocational outcomes; and
- Identify markers resulting in protection from, and amelioration of, poor mental health and adverse health behaviour(s).

SURVEY DESIGN

The design and development of the Survey methodology and instrumentation was done in consultation with the Australian Bureau of Statistics. Efforts have been made to ensure that the data collected are both scientifically relevant and pertinent to current government information needs and policy initiatives. To do this, reference groups were convened in early 1992 with representation from the various government departments and community agencies which have a stake in the outcome of the Survey findings.

This process involved senior policy input from the Western Australian State Departments of Health, Education, Community Development and Police; the Alcohol and Drug Authority; the Authority for the Intellectually Handicapped; the Catholic Education Office of Western Australia; the Association of Independent Schools of Western Australia; the Aboriginal

Affairs Planning Authority; Aboriginal Medical Service; and the Australian Institute of Family Studies.

PILOT SURVEY

A pilot survey of 260 Perth metropolitan households with 4 to 16 year-old children was conducted between 24 August and 7 September 1992. This field-tested the survey methodology and established its community acceptability, with a household participation rate of 72 per cent. Consent was also obtained to contact schools to obtain information relating to individual students and the characteristics of their school environment. A total of 162 government and non-government schools participated in the pilot survey. The pilot data was used to refine the final survey process, survey instruments and data collection procedures.[1]

MAIN SURVEY

The main Survey commenced on 5 July 1993 and was completed on 27 September 1993. A random sample of 1,776 households throughout metropolitan and country regions of Western Australia was approached, with 1,462 (82 per cent) consenting to participate. A total of 2,737 children aged 4 to 16 years were surveyed. Collection districts across Western Australia were sampled and 27 trained interviewers conducted the household interviews. Data were gathered from consenting families from three main sources:

- the principal caregiver (see *Principal caregiver* in the Glossary);
- adolescents aged 12 to 16 years; and
- the school principal and teacher(s) of surveyed children.

On 10 October 1993 all Survey children who were in school (1,963 children) were followed up through survey instruments that collected details from the school principal and the classroom teacher. A total of 413 schools statewide were involved and 96 per cent of all school survey materials were returned. This allowed estimates of health, mental health and competencies as observed in the school context. Information about the school culture was also collected.

SURVEY CALIBRATION

The clinical calibration phase of the Child Health Survey was conducted from 17 March 1994. A random sample of 260 families was drawn, stratified by the presence or absence of a mental health disorder in a randomly selected child seen during the household survey. Experienced mental health professionals then visited the home and conducted a structured psychiatric interview with the caregiver and the child aimed at generating DSM-III-R clinical diagnoses (see *DSM-III-R clinical diagnoses* in the Glossary). This allowed the calibration of the entire survey sample against another criterion of mental health disorder.

SURVEY SIGNIFICANCE

The large scope, complex sampling and state-of-the-art survey methodology makes this project one of considerable scientific significance. The active involvement of government departments and other agencies in the project design should also ensure that important policy questions are addressed and that critical information is obtained to assist the planning and effective delivery of services to Western Australian children, adolescents and families in the 1990's.

ENDNOTES

1 Garton AF, Zubrick SR, Silburn SR. The Western Australian Child Health Survey: Pilot Study. *Australian and New Zealand Journal of Psychiatry* (in press):28.

1 CHARACTERISTICS OF THE POPULATION

The composition and diversity of Western Australian families and the nature of family life is steadily changing. Children are being raised in a changing family environment with the growing emergence of alternative family forms through de facto living, separation and divorce and remarriage.

This chapter briefly examines some of the characteristics of surveyed children aged 4 to 16 years and the families that nurtured them and provided the environment for their growth and development.

YOUNG PEOPLE – A POPULATION PERSPECTIVE

The Estimated Resident Population of 4 to 16 year-olds in Western Australia, at 30 June 1993, numbered 331,400, or one-fifth of the total population.

The population of 4 to 16 year-olds had increased by 8 per cent over the ten years from 1983. The growth in the total population over the same period was significantly higher, at 22 per cent.

Population projections for the ten years to 2003 show the population of 4 to 16 year-olds is expected to grow by 5 per cent to 348,900, whereas a higher growth is expected of the total population, at 15 per cent. Essentially, this reflects a continuing trend of the ageing of the population. Contributing factors include a strong growth in the population group aged over 60 years resulting from significant and persistent increases in the expectation of life in recent decades,[1] and a reduction in the birth rate.[2]

Between 1983 and 1993, the number of children aged 4 to 11 years increased by 13 per cent while the number of adolescents aged 12 to 16 years increased by just 1 per cent. As the younger group ages over the next decade to 2003, the increase in 4 to 11 year-olds is expected to slow to 3 per cent while the population of 12 to 16 year-olds is projected to increase by 9 per cent.

Males made up 52 per cent of 4 to 16 year-olds in 1993. They represented a similar figure, 51 per cent, in 1983, and this proportion is expected to be the same in 2003.

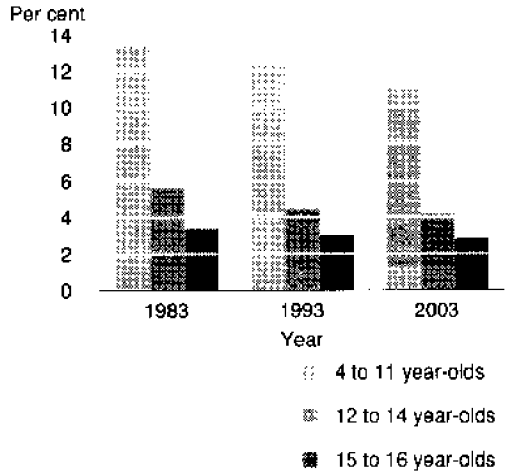
TABLE 1.1 Population: Age and sex, at 30 June ('000)

	1983			*1993p*			*2003(a)*		
Age(years)	*Males*	*Females*	*Persons*	*Males*	*Females*	*Persons*	*Males*	*Females*	*Persons*
0-3	45.1	43.0	88.2	51.4	48.6	100.0	54.3	51.7	105.9
4-11	94.1	89.0	183.1	106.5	100.3	206.8	108.7	103.8	212.5
12-14	39.2	37.0	76.2	38.5	36.3	74.8	41.9	39.8	81.7
15-16	24.1	22.8	46.9	25.7	24.1	49.9	28.1	26.5	54.6
Total 4-16	*157.5*	*148.8*	*306.2*	*170.7*	*160.7*	*331.4*	*178.8*	*170.0*	*348.9*
17-24	97.3	94.2	191.5	108.9	104.2	213.1	111.7	108.3	220.0
25-64	339.8	323.0	662.8	437.3	425.1	862.4	524.3	517.0	1 041.3
65 and over	52.0	68.4	120.4	74.3	95.2	169.5	96.8	118.3	215.0
All persons	**691.7**	**677.4**	**1 369.1**	**842.5**	**833.9**	**1 676.4**	**965.9**	**965.2**	**1 931.1**

(a) Population projections (Series A). This series is based on assumptions about birth rates, mortality and interstate and overseas migration. For further information, see *Population projections* in the Glossary.

Source: *Estimated Resident Population* (ABS Catalogue No. 3201.0), *Population Projections* (ABS Catalogue No. 3222.0)

FIGURE 1.1 Children as a proportion of the total population



SURVEYED CHILDREN – DEFINING THE POPULATION

The WA Child Health Survey did not attempt to sample from the total population of Western Australian 4 to 16 year-olds (see Appendix C – Sample Design). This explains the lower figures represented in the Survey results (see *Table 1.2*) in comparison with the Estimated Resident Population (see *Table 1.1*). The two groups excluded from the sample were:

- *Aboriginal children living in country areas.* Their exclusion was due mainly to difficulties associated with establishing a framework from which to select a representative sample, and to the logistics of collecting data from sometimes widespread and isolated communities. The Institute for Child Health Research is undertaking exploratory discussions with a view to conducting a similar survey of Western Australian Aboriginal children.
- *Children living alone, in group homes, or non-private dwellings.* In these arrangements, either there were no caregivers present, or the caregivers were not in a position to provide independent information about these children.

SURVEYED CHILDREN – A PROFILE

The terms 'children' and 'child', for this Survey, refer to persons aged 4 to 16 years inclusive. For purposes of analysis and presentation of findings, they are further grouped into the following age cohorts:

- younger children – aged 4 to 11 years
- adolescents – aged 12 to 16 years

'Younger adolescents' and 'older adolescents' refer to 12 to 14 year-olds and 15 to 16 year-olds respectively.

THE SURVEY POPULATION

There were 302,900 children aged 4 to 16 years in Western Australia within the scope of the WA Child Health Survey. Of these children, just under two-thirds (64 per cent) were younger children.

Almost 73 per cent of children lived in the Perth metropolitan area. At a finer geographic level,

TABLE 1.2 Child population: Sex, age and health region ('000)

	Males			*Females*			*Children*		
Region	*4-11 years*	*12-16 years*	*All males*	*4-11 years*	*12-16 years*	*All females*	*4-11 years*	*12-16 years*	*All children*
Perth metro—									
North metro	22.0	13.7	35.7	24.2	15.5	39.7	46.2	29.2	75.4
South metro	27.0	16.0	43.0	25.5	15.8	41.3	52.5	31.8	84.3
East metro	19.3	10.5	29.7	18.7	11.8	30.6	38.0	22.3	60.3
Total	*68.3*	*40.2*	*108.4*	*68.5*	*43.1*	*111.6*	*136.7*	*83.3*	*220.0*
Country—									
Southern	16.4	8.0	24.4	12.7	7.3	20.0	29.1	15.3	44.4
Central	9.5	4.0	13.4	10.0	4.9	14.9	19.4	8.9	28.3
Far North	3.2	1.6	4.8	4.2	1.2	5.4	7.3	2.9	10.2
Total	*29.0*	*13.7*	*42.6*	*26.9*	*13.4*	*40.2*	*55.9*	*27.0*	*82.9*
Western Australia	**97.2**	**53.8**	**151.0**	**95.4**	**56.5**	**151.8**	**192.6**	**110.3**	**302.9**

the State was divided into six distinct health regions (see *Survey Regions* in the Glossary and Appendix D – Western Australia: Survey Regions). The most populous region was the South metropolitan region, where almost 28 per cent of children were located, and the least populous the Far North WA region, containing 3 per cent.

The sex ratio (number of males per 100 females) among 4 to 16 year-olds was 99.5. This figure varied between younger children and adolescents, falling from 101.9 for 4 to 11 year-olds to 95.2 for 12 to 16 year-olds. Differences also existed between regions. There were a greater number of females in the Perth metropolitan region (a sex ratio of 97.1). The reverse was true for the country, where the ratio was 106.0.

LIVING ARRANGEMENTS

TABLE 1.3 Living arrangements

Family type	*Number ('000)*	*Per cent*
4 TO 11 YEAR-OLDS		
Children of two parent families—		
Natural/adopted	145.9	89.4
Foster and blended(a)	17.4	10.6
Children of one parent families—		
Natural/adopted	27.8	95.1
Foster and blended(a)	**1.4	*4.9
Total	**192.6**	..
12 TO 16 YEAR-OLDS		
Children of two parent families—		
Natural/adopted	74.8	84.6
Foster and blended(a)	13.7	15.4
Children of one parent families—		
Natural/adopted	21.3	97.7
Foster and blended(a)	**0.5	**2.3
Total	**110.3**	..

(a) See *Blended family* in the Glossary.

Nearly 17 per cent of 4 to 16 year-old children were living in one parent families at the time of the Survey. The majority of these children (96 per cent) were in a family environment that consisted of only natural or adopted children. This proportion was lower among children in two parent families, at 88 per cent, due in part to the greater possibility of step children in these families.

As children move into adolescence, the picture of family structure changes with increased exposure to the possibilities of divorce and remarriage. Among two parent families there was a greater proportion of adolescents than younger children in foster or blended families (15 per cent compared with 11 per cent).

MARITAL STATUS

TABLE 1.4 Principal caregiver: Marital status

Status	*Number ('000)*	*Per cent*
First marriage	114.8	68.2
Remarried	13.3	7.9
Separated	10.7	6.3
Divorced	13.2	7.9
Widowed	3.3	1.9
Never married	5.0	2.9
Defacto	8.1	4.8
Total(a)	**168.6**	**100.0**

(a) Includes not stated.

Over 76 per cent of the principal caregivers of 4 to 16 year-olds were married. Ten per cent of these married caregivers were in their second or subsequent marriage, giving rise to a high proportion of the blended family environments (see *Table 1.3*).

BIRTHPLACE

TABLE 1.5 Birthplace

Birthplace	*Number ('000)*	*Per cent*
Australia	268.0	88.5
Main English-speaking countries—		
UK and Ireland	13.2	4.4
New Zealand	3.1	*1.0
Other(a)	*1.2	**0.4
Total	*17.5*	*5.8*
Non-English-speaking countries—		
Asia	8.1	2.7
Europe(b)	*3.0	*1.0
Other	*4.6	*1.5
Total	*15.7*	*5.2*
All countries(c)	**302.9**	**100.0**

(a) Includes Canada, South Africa and USA. (b) Excluding UK and Ireland. (c) Includes not stated.

Over 88 per cent of 4 to 16 year-olds were born in Australia. The next most common countries of birth were also main English-speaking countries, being the UK and Ireland (4 per cent), and New Zealand.

Almost 11 per cent of Western Australian children were born overseas (33,200 children). The majority of these children (53 per cent) were born in the main English-speaking countries, predominantly the UK and Ireland (76 per cent). Nearly 52 per cent of children from non-English-speaking countries were from the Asian region.

Over 53 per cent of children had parents who were both born in Australia. Another 22 per cent had one parent born in Australia. More than 29 per cent of 4 to 16 year-olds had at least one parent born in an English-speaking country (other than Australia), while a smaller proportion (21 per cent) had at least one parent born in a non-English-speaking country.

TABLE 1.6 Birthplace of parents(a) ('000)

	Age group (years)		All
	4-11	12-16	children
Both born in Australia	102.6	58.6	161.2
One parent born in Australia and one born overseas in—			
English-speaking country	28.5	14.8	43.2
Non-English-speaking country	14.5	8.1	22.6
Both born overseas—			
Both in English-speaking countries	24.3	11.7	36.0
Both in non-English-speaking countries	16.3	13.9	30.3
One in English-speaking country and one in non-English-speaking country	6.3	3.2	9.5
Total(b)	**192.6**	**110.3**	**302.9**

(a) In those cases where only one parent's birthplace was given, both parents were classified to the same birthplace. (b) Includes not stated.

Twelve per cent of children had both parents born in English-speaking foreign countries. In 10 per cent of cases, both parents were born in non-English-speaking countries, but this figure was higher among adolescents than younger children (13 per cent compared with 8 per cent).

LANGUAGE

TABLE 1.7 Proficiency in English of principal and secondary caregiver (Per cent)

	Principal caregiver: Speaks English—			
Secondary caregiver	Well or very well	Not well or not at all	English only	Total
Speaks English—				
Well or very well	60.1	50.2	1.5	7.8
Not well or not at all	*8.6	*24.1	**0.0	*1.2
English only	16.2	**5.8	78.6	71.3
No secondary caregiver(a)	15.0	*19.8	19.9	19.6
Total	**100.0**	**100.0**	**100.0**	**100.0**
number ('000)	**15.7**	**3.1**	**149.5**	**168.6**

(a) Includes not stated.

Over 11 per cent of principal caregivers spoke a language other than English at home. A high proportion of these people were proficient in the English language (84 per cent).

PARENTAL INCOME

TABLE 1.8 Income distribution(a)

Income quintile(b)	Upper boundary	Income share
	($ per week)	(Per cent)
Lowest	296	4.5
2nd	524	11.6
3rd	748	17.5
4th	1 044	24.7
Highest	..	41.6
Total	..	**100.0**

(a) Based on parental income. (b) See *Income quintiles* in the Glossary.

Tables 1.8 and 1.9 show a disproportionate spread of parental income among families (see *Parental income* in the Glossary). The proportion of total income share increased substantially in the higher income quintiles, such that the highest quintile, as a group, received more than nine times the amount of income than the lowest quintile. This represents nearly 42 per cent of total parental income.

TABLE 1.9 Parental income

Annual income	*Number ('000)*	*Per cent*
$3,000 or less	6.2	3.6
$3,001-$5,000	*1.8	*1.0
$5,001-$8,000	6.3	3.7
$8,001-$12,000	11.1	6.6
$12,001-$16,000	9.8	5.8
$16,001-$20,000	9.2	5.4
$20,001-$25,000	15.9	9.4
$25,001-$30,000	15.9	9.5
$30,001-$35,000	14.8	8.8
$35,001-$40,000	12.4	7.3
$40,001-$50,000	23.3	13.8
$50,001-$60,000	17.7	10.5
$60,001-$70,000	11.2	6.7
More than $70,000	12.2	7.2
Don't know	*0.9	*0.6
Total	**168.6**	**100.0**

The most common government benefits or pensions received by principal caregivers were family allowance/child endowment benefits (84 per cent), family allowance supplement (21 per cent), and sole parent pension or Jobs, Education and Training (JET) scheme (12 per cent).

TABLE 1.10 Principal caregiver: Income from government pensions and cash benefits

Pension/benefit	*Number ('000)*	*Per cent*
Family allowance/child endowment	141.4	83.9
Family allowance supplement	34.8	20.6
Unemployment benefit	*1.7	*1.0
Sole parent pension or JET scheme	19.7	11.7
Disability support pension	*3.8	2.3
Austudy or Abstudy	5.3	3.2
Child disability allowance	4.5	2.7
Rent assistance	9.8	5.8
Other(a)	6.4	3.8
Total(b)(c)	**168.6**	..

(a) Includes age pension, carers pension, sickness benefit and any other government cash benefit or pension. (b) Includes not stated. (c) Total may be less than the sum of components as persons may claim more than one pension/benefit.

EMPLOYMENT

Almost 60 per cent of principal caregivers were employed. The majority of the remainder were not in the labour force (33 per cent of all principal caregivers), and 7 per cent were unemployed. This relatively low rate of labour force participation can largely be explained by the fact that principal caregivers were predominantly females, and the added barriers to participating in the labour force that women face in the form of caring for children and other domestic responsibilities.[3]

An examination of secondary caregivers also gives a clearer picture of the working status of a household. Of the estimated 11,900 unemployed principal caregivers, in 49 per cent of cases the secondary caregiver was employed. Similarly, in those families where the principal caregiver was not in the labour force, 66 per cent of secondary caregivers were employed.

The most common situation in a household involved both caregivers in employment (47 per cent of all households).

In 25 per cent of households, the secondary caregiver was the only caregiver employed. The same was true of principal caregivers less than half as often (12 per cent). Another 15 per cent of households had neither the principal nor secondary caregiver employed.

TABLE 1.11 Labour force status of principal and secondary caregiver (Per cent)

	Principal caregiver: Labour force status			
Secondary caregiver	*Employed*	*Un-employed*	*Not in labour force*	*Total(a)*
Labour force status—				
Employed	79.1	49.0	66.1	72.6
Unemployed	*2.5	*9.3	7.8	4.8
Not in labour force	*2.4	**5.5	*4.2	3.2
No secondary caregiver(a)	16.0	36.3	21.9	19.5
Total	**100.0**	**100.0**	**100.0**	**100.0**
number ('000)	**100.4**	**11.9**	**55.9**	**168.6**

(a) Includes caregivers whose labour force status was not stated.

EDUCATION

In the Survey, caregivers were asked questions about their level of educational attainment. The most frequent response to school grade completed was year 10, with 40 per cent of principal caregivers completing this grade. Over 45 per cent of principal caregivers completed at

least one year of senior high school (year 11 or above).

TABLE 1.12 Principal caregiver: Highest completed grade

Grade completed	*Number ('000)*	*Per cent*
Primary school	4.5	2.7
Year 8	5.3	3.2
Year 9	14.1	8.3
Year 10	66.9	39.7
Year 11	25.6	15.2
Year 12	51.1	30.3
Total(a)	**168.6**	**100.0**

(a) Includes not stated.

Almost 47 per cent of principal caregivers had completed a post-school qualification. The figure was higher, at 61 per cent, for secondary caregivers. In 41 per cent of families where the principal caregiver had no post-school qualification, there was a secondary caregiver who had a vocational qualification, diploma or degree.

In 27 per cent of families, both caregivers held post-school qualifications. In another 20 per cent of cases, neither had completed a post-school qualification.

TABLE 1.13 Highest post-school qualification of principal and secondary caregivers (Per cent)

	Principal caregiver: Qualification				
Secondary caregiver	*No post-school*	*Vocational(a)*	*Diploma*	*Degree*	*Total*
Qualification—					
No post-school	37.2	27.2	23.9	13.2	30.7
Vocational(a)	28.9	36.8	25.4	9.1	28.6
Diploma	5.8	5.6	12.4	7.8	6.6
Degree	5.5	8.4	24.8	52.4	12.5
No secondary caregiver	20.8	20.7	11.6	15.3	19.6
Total(b)	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
number ('000)	**89.5**	**38.9**	**18.9**	**15.4**	**168.6**

(a) Trade or TAFE certificate. (b) Includes 'other' qualifications, and not stated.

DWELLING CHARACTERISTICS

STRUCTURE OF DWELLING

In the main, families with children aged 4 to 16 years lived in separate houses (91 per cent). The majority of the remainder (another 6 per cent) lived in medium density housing (that is, a semi-detached house, duplex, townhouse or terrace house, or single storey flat, or home unit).

TABLE 1.14 Families with children aged 4 to 16 years: Structure of dwelling

Dwelling type	*Number ('000)*	*Per cent*
Separate house	153.5	91.1
Semi-detached(a)	8.0	4.7
Single storey flat/unit/townhouse	*2.0	*1.2
Farm	**2.6	*1.5
Other	*2.5	*1.5
Total	**168.6**	**100.0**

(a) Includes duplex, townhouse or terrace house.

NATURE OF OCCUPANCY

Over 73 per cent of families with children aged 4 to 16 years either owned or were buying their own home. Another 25 per cent were renting.

TABLE 1.15 Families with children aged 4 to 16 years: Nature of occupancy(a) (Per cent)

Region	*Owned*	*Being bought*	*Renting*
Perth metro—			
North metro	36.3	42.2	21.1
South metro	25.9	47.2	24.9
East metro	28.9	46.3	23.3
Total	30.3	45.3	23.1
Country—			
Southern	43.3	34.6	19.5
Central	35.2	29.3	31.7
Far North	*9.1	25.1	62.6
Total	36.1	31.6	29.2
Western Australia	**31.8**	**41.6**	**24.8**

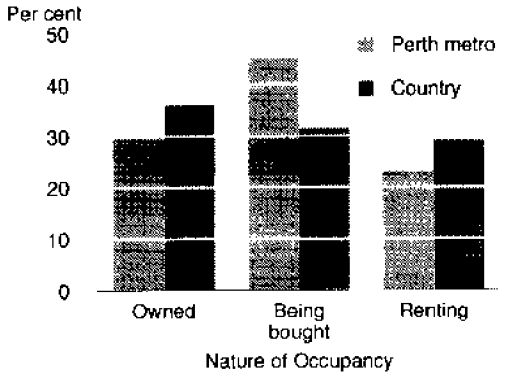
(a) Other types of occupancy and not stated are not reported in the table.

TABLE 1.16 Families with children aged 4 to 16 years: Period in current dwelling (Per cent)

	Perth metro				Country				Western
Period	North metro	South metro	East metro	Total	Southern	Central	Far North	Total	Australia
Less than 6 months	12.2	9.4	10.2	10.6	9.4	13.3	12.4	11.1	10.7
7-24 months	14.2	15.6	13.3	14.5	16.4	22.2	26.5	19.7	15.9
Between 2 and 5 years	23.7	28.4	29.7	27.2	22.8	25.1	36.2	25.3	26.7
5-10 years	23.3	29.1	32.1	27.5	30.4	25.3	18.1	27.1	27.7
11 years or more	22.6	17.1	14.8	18.3	20.7	14.1	*5.4	16.5	17.8
Total(a)	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
number(a) ('000)	**42.3**	**47.0**	**34.3**	**123.6**	**23.8**	**15.5**	**5.7**	**45.0**	**168.6**

(a) Includes not stated.

FIGURE 1.2 Nature of occupancy



Large differences in these figures existed across regions. In general, families in the Perth metropolitan area had higher home ownership (houses owned or being bought) than in country regions, the exception being the Southern WA region which had the highest proportion of owned homes (43 per cent) in the State. In contrast, in the Far North WA region, families were predominantly renting (63 per cent). This proportion was almost twice as high as any other region, the next highest being the Central WA region (32 per cent).

PERIOD IN CURRENT DWELLING

Nearly 27 per cent of families with 4 to 16 year-olds had been living in their current dwelling for a period of two years or less. Families were less inclined to inhabit the same household for longer periods in the Far North WA and Central WA regions, in comparison with the rest of the State. Nearly 39 per cent and 36 per cent of families in these regions respectively had been living in their current dwelling for two years or less.

ENDNOTES

1 *Deaths, Western Australia* (ABS Catalogue No. 3312.5).

2 *Births, Australia* (ABS Catalogue No. 3301.0).

3 *Focus on Families: Education and Employment* (ABS Catalogue No. 4421.0).

2 PHYSICAL HEALTH

Examination of the physical health status of Western Australian children is important principally for three reasons:

- *To help understand how physical health can be influenced and shaped by a diverse range of factors including economic, attitudinal, behavioural, parental and environmental;*
- *To provide prevalences of physical health problems in order to establish and maintain programs and policies of prevention and intervention; and*
- *To monitor progress in achieving health goals.*

This chapter looks at a number of life events impacting upon the physical health of children.

PREGNANCY, BIRTH AND EARLY DEVELOPMENT

Child physical and mental health outcomes are known to be associated with pre-natal and early post-natal development. In the Western Australian Child Health Survey, principal caregivers provided information about aspects of pregnancy, birth and early child development for all Survey children. The following analysis places emphasis on factors that predispose children to increased risks of health and developmental problems.

PREGNANCY AND BIRTH

Pregnancy complications and low birth weight are important markers of developmental problems, psychological and social difficulties, or all three. The Survey revealed that 20 per cent of pregnancies involved complications resulting in hospitalisation of the mother. Of all children aged 4 to 16 years, 6 per cent (18,500) were of low birth weight (less than 2,500 grams).

The prevalence of these two health risk factors are comparable to those found in population data describing all births in Western Australia.[1]

BREAST FEEDING

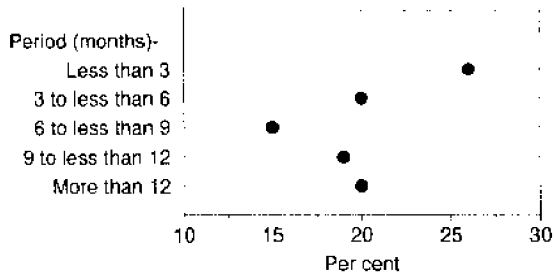
Early nutrition plays a critical role in healthy child development and in providing protection from illness.

While breast feeding lowers the risk of infant illness, opportunities for breast feeding may reflect the preference of the mother. Breast feeding may also be interrupted by health and physical factors in the mother or the infant, or by the need for the mother to return to work.

The WA Child Health Survey found that, among 4 to 16 year-olds, 84 per cent had been breast fed. For breast feeding mothers, the feeding period most often reported was for up to three months after birth (26 per cent of mothers). The next most frequent periods were from three to six months and for a period exceeding 12 months (both 20 per cent).

Recent Western Australian data shows that the prevalence of breast feeding in 1994 has increased to 92 per cent.[2]

FIGURE 2.1 Breast feeding mothers: Period of breast feeding



DEVELOPMENT MILESTONES

Walking, talking and toilet training are major milestones in a child's development. Their timely emergence are important indicators of the health and well-being of the child and a measure of growth, development and emerging independence. Caregivers were asked to report on these milestones.

Half of all children should be able to walk without help by 13 months of age.[3] By 18 months of age, the Child Health Survey showed that all but 3 per cent of children had taken their first five steps without help.

By 24 months, over half of all children should be able to put three words together in a phrase.[3] The Child Health Survey showed that just over three-quarters (76 per cent) of all children could accomplish this by 24 months of age. By 30 months this had increased to 91 per cent.

Toilet training, and its success, varies considerably from child to child and from family to family. For most children (60 per cent), the start of toilet training took place in their second year. By the end of the 24th month, 81 per cent of children had started toilet training. By 36 months, 88 per cent of all children had completed toilet training.

IMMUNISATION

Immunisation is a major indicator of child health. Children are protected from serious and often fatal illnesses through programs of immunisation. Failure to immunise children raises their risk of serious illness.

Two indicators of immunisation were used in the Survey.

TRIPLE ANTIGEN IMMUNISATION

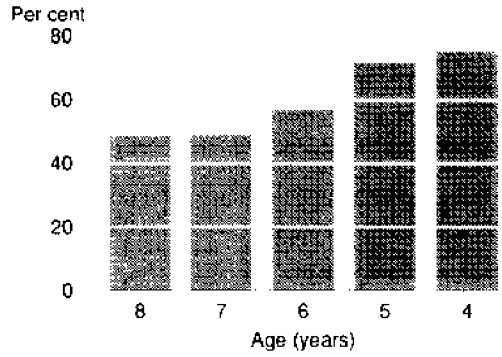
Ninety-seven per cent of all Western Australian children were immunised as babies for diphtheria, tetanus and whooping cough (the triple antigen series). An estimated 9,400 children had not been immunised with triple antigen.

MEASLES, MUMPS AND RUBELLA IMMUNISATION

All children, regardless of gender, should be immunised against the serious illnesses measles, mumps and rubella.

For seven year-old children, 48 per cent had been immunised against these three diseases. The rate of immunisation subsequently grew at an average of 9 percentage points a year and, for four year-olds, the immunisation rate was 75 per cent.

FIGURE 2.2 Children aged 4 to 8 years: Proportion immunised against measles, mumps and rubella



Immunisation for the combination of measles, mumps and rubella (the MMR vaccine) was introduced in 1990. By 1993, the rate of MMR immunisation for children born in that year was recorded as 88 per cent,[4] representing a substantial gain over immunisation levels in recent years – from the Survey in 1993, 75 per cent of those children who were 4 years of age had been immunised.

FUTURE DIRECTIONS

- **While current data indicates that rates of immunisation against measles, mumps and rubella have improved in the last three to four years[4], the seriousness of these illnesses requires that MMR immunisation awareness and inoculation programs continue to be rigorously pursued to maximise the overall rate.**

GENERAL HEALTH

All principal caregivers were asked to describe their children's general health. The concept of "general health" was one that appeared to have meaning to caregivers. Their responses reflected the gravity and chronic persistence of child illness and its consequent impact on the ability of children to function normally.

Of all children aged 4 to 16 years, 81 per cent were described as being in excellent or very good health while 15 per cent were described as having good health. A further 4 per cent (13,000 children) were considered to be in fair or poor health.

TABLE 2.1 Children's general health – Caregiver's description

	Males		Females	
	No. ('000)	*Per cent*	*No. ('000)*	*Per cent*
Excellent	67.7	44.8	68.7	45.3
Very good	51.2	33.9	56.5	37.2
Good	24.9	16.5	20.8	13.7
Fair/poor	7.1	4.7	5.9	3.9
Total	**151.0**	**100.0**	**151.8**	**100.0**

There was little difference between the general health levels of boys and girls. Similarly, children living in the Perth metropolitan area and those living in country areas had comparable levels of general health.

GENERAL HEALTH AND RELATED ISSUES

Chronic disease. Children whose general health was reported to be fair or poor experienced significantly higher rates of asthma, migraine and developmental delay.

Use of health care services. The general health of children was also reflected in aspects of their health care, particularly access to health care services. Children with fair to poor health used health services much more than children with excellent to good health.

Over 83 per cent of children with fair to poor health had visited a general practitioner compared with just under half (49 per cent) of children described as having excellent health.

With deterioration in general levels of health, the proportion of children attending hospitals, private medical specialists and therapists also increased significantly.

TABLE 2.2 General health: Use of selected health care services (Per cent)

	General health status			
Health care service	*Excellent*	*Very good*	*Good*	*Fair/poor*
General practitioner	48.8	63.1	72.0	83.5
Hospital(a)	10.4	15.3	20.4	31.2
Private medical specialist(b)	7.9	11.4	17.8	21.0
Therapist(c)	8.1	8.0	9.1	*15.0

(a) Hospital accident and out-patient departments. (b) Includes paediatrician, psychiatrist, and ear, nose and throat specialist. (c) Includes physiotherapist, chiropractor, and speech or other therapist.

CHILDHOOD INJURY

Childhood and adolescence are periods of relatively good health. Most children rarely need hospitalisation or urgent medical care. When they do, a common cause of hospitalisation is injuries resulting in broken bones and fractures. Just over 16 per cent of 4 to 16 year-olds reported having experienced this type of injury.

Other more common causes of hospitalisation as a result of injury were: injuries to the head (with loss of consciousness) – 5 per cent; poisoning – 3 per cent; and burns – reported for 2 per cent of children in the Survey.

Fractures. These were the most frequent injuries ever suffered by children. While one in ten younger children had experienced a fracture or broken bone, this proportion had increased to one in four among 12 to 16 year-olds.

Head injuries. Adolescents were more than twice as likely as younger children to have had a head

TABLE 2.3 Childhood injury

	Fractures and broken bones		*Head injuries*		*Poisoning(a)*		*Burns(a)*	
	No. ('000)	*Per cent*	*No. ('000)*	*Per cent*	*No. ('000)*	*Per cent*	*No. ('000)*	*Per cent*
4 to 11 year-olds	21.5	11.2	6.4	3.3	5.5	2.9	3.7	1.9
12 to 16 year-olds	28.2	25.6	9.0	8.2	3.3	2.9	2.2	2.0
Perth metro	36.1	16.4	10.9	5.0	5.2	2.3	3.9	1.8
Country	13.7	16.5	4.6	5.5	3.6	4.4	2.0	2.4
Western Australia	**49.8**	**16.4**	**15.5**	**5.1**	**8.8**	**2.9**	**5.9**	**2.0**

(a) Requiring admission to hospital.

injury resulting in loss of consciousness. While 3 per cent of 4 to 11 year-olds had suffered a head injury, this proportion increased to 8 per cent for adolescents.

Poisoning. Three per cent of 4 to 16 year-olds reported suffering poisoning requiring admission to hospital. In country areas of the State, the proportion was 4 per cent compared with 2 per cent for the Perth metropolitan area.

Burns. The incidence of 4 to 16 year-olds who had experienced burns which required hospitalisation was relatively small, at 2 per cent.

LEADING HEALTH PROBLEMS

Principal caregivers were asked to indicate whether their child had particular health problems or conditions (see *Specific health problems* in the Glossary).

ASTHMA

Asthma was the leading health problem reported among 4 to 16 year-olds. One child in five (59,500 children) suffered from the condition.

The overall incidence of reported asthma cases declined as children grew older – 21 per cent of 4 to 11 year-olds had asthma compared with 17 per cent of adolescents. Across the six survey regions, this decline was mirrored in two of the three Perth regions (East metropolitan remaining relatively unchanged) and the Southern WA region. In the Central and Far North WA regions, the proportion of reported asthma cases increased with age.

MIGRAINE AND SEVERE HEADACHE

Migraine and severe headache afflicted 8 per cent of surveyed children. These conditions were much more prevalent among 12 to 16 year-olds (13 per cent) than younger children (4 per cent).

OTHER HEALTH PROBLEMS

Deformity (in terms of either stiffness or deformity of the foot, leg, fingers, arms or back) was another condition reported as becoming more prevalent with age. Just under 2 per cent of 4 to 11 year-olds had a deformity, increasing to 5 per cent of adolescents. This increase was most pronounced in the Perth metropolitan area.

Of all children aged 4 to 16 years, 3 per cent (8,200) had developmental delay, a condition that did not vary greatly with either age or area.

Epilepsy was another health problem, affecting 1 per cent (3,100) of all children.

USE OF MEDICATION

The use of medication by children is important in the prevention or treatment of illness by controlling symptoms or curing the cause.

For each child in the Survey, caregivers were asked to report the use of prescribed medications (including anti-biotics) taken at regular times. Non-prescribed vitamins and minerals were excluded.

Just under 14 per cent of all 4 to 16 year-old children took some form of prescribed medication. Boys aged 4 to 11 years had the highest rate of use (17 per cent) while the lowest

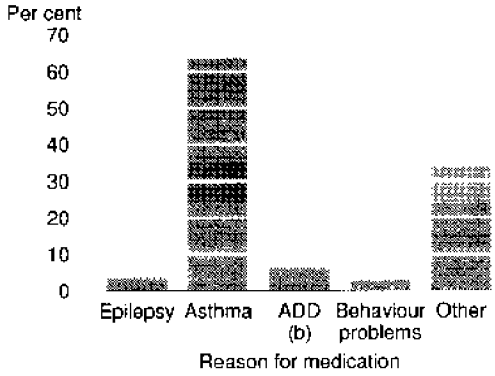
TABLE 2.4 Leading health problems

	Asthma		*Migraine and severe headache*		*Clumsiness(a)*		*Deformity(b)*		*Developmental delay*		*Heart problem*	
	Number ('000)	*Per cent*	*Number ('000)*	*Per cent*	*Number ('000)*	*Per cent*	*Number ('000)*	*Per cent*	*Number ('000)*	*Per cent*	*Number ('000)*	*Per cent*
4 to 11 year-olds	40.4	21.0	8.1	4.2	10.2	5.3	3.5	1.8	5.2	2.7	3.2	1.6
12 to 16 year-olds	19.1	17.3	14.8	13.5	4.7	4.3	5.2	4.7	3.0	2.8	*1.9	*1.8
Perth metro	43.4	19.7	16.2	7.3	9.9	4.5	6.8	3.1	5.7	2.6	3.7	*1.7
Country	16.1	19.4	6.8	8.2	5.0	6.1	2.0	2.4	2.6	3.1	1.4	*1.7
Western Australia	**59.5**	**19.6**	**22.9**	**7.6**	**14.9**	**4.9**	**8.7**	**2.9**	**8.2**	**2.7**	**5.1**	**1.7**

(a) Any difficulty with co-ordination or clumsiness. (b) Any stiffness or deformity of the foot, leg, fingers, arms or back.

rate was among 4 to 11 year-old girls (11 per cent).

FIGURE 2.3 Children who take medication: Reason for medication(a)



(a) Children may take medication for more than one health problem. (b) Hyperactivity or Attention Deficit Disorder

Of the group of children who took prescribed medication (some took more than one medication), almost two in three (64 per cent) did so to treat asthma. A further 34 per cent took medication for a variety of health-related reasons, including epilepsy, hyperactivity or attention deficit disorder, and behavioural problems.

TABLE 2.5 Use of prescribed medication on a regular basis(a)

	Number ('000)	*Per cent*
Medication taken for—		
Epilepsy	*1.6	*0.5
Asthma	26.3	8.7
Hyperactivity or Attention Deficit Disorder	2.6	0.8
Behaviour problems	*1.3	*0.4
Other reasons	14.1	4.7
All medications	**41.4**	**13.7**

(a) Some children took more than one medication.

Just under 1 per cent of children were on stimulant medication for hyperactivity or attention deficit disorder. These estimates matched those derived from population data held by the Health Department of Western Australia, which also shows that the children taking this medication were predominantly male.[5] They also reveal that Western Australia's rate of prescription of stimulant medication in 1993 was twice that of New South Wales, Northern Territory, South Australia and Queensland, three times that of the Australian Capital Territory, and five times that of Victoria and Tasmania.

FUTURE DIRECTIONS

- **Western Australia has the highest rate of use of medication for hyperactivity or attention deficit disorder.[5] Research is now needed to establish why the rate of use of this medication is so high in Western Australia. Also needed are studies that evaluate the validity and reliability of the diagnosis of attention deficit disorder and of the benefits and risks of stimulant medication for treatment.**

HEALTH CARE UTILISATION

Maintaining good physical health and preventing or treating illness and injury requires a fair and accessible distribution of a wide range of health care and other services. Results from the Child Health Survey showed a pattern of accessibility and use of physical health care services that was notably different, for some services, between the Perth metropolitan area and country areas.

GENERAL PRACTITIONERS (GPs) AND DENTISTS

Over half of surveyed children had visited a GP (59 per cent) or dentist (56 per cent) during the six months prior to the Survey. While the proportion of dentist visits by Perth metropolitan and country children was substantially the same, visits to GPs were more prevalent among Perth metropolitan children (61 per cent) compared with country children (53 per cent). Less than half (49 per cent) of children in the Far North WA region had seen a GP.

HOSPITAL SERVICES

Just under one in ten children had attended either hospital emergency departments (9 per cent) or hospital out-patient departments (8 per cent). There was a greater proportion of 4 to 11 year-olds using these services compared with adolescents. Children living in country areas were more likely to have used these services than Perth metropolitan children. The highest rate of attendance at accident and emergency departments occurred in the Central WA and

TABLE 2.6 Use of selected health care services in the six months prior to the survey ('000)

	Perth metro				*Country*				
Type of service	*North metro*	*South metro*	*East metro*	*Total*	*Southern*	*Central*	*Far North*	*Total*	*Western Australia*
Hospital emergency	4.8	7.9	6.0	18.6	3.8	4.3	1.8	9.8	28.5
General practitioner	47.7	51.6	35.3	134.5	23.4	15.3	5.0	43.8	178.3
Community and child health centre	*2.1	3.8	**2.0	7.9	*1.5	2.3	*0.4	4.2	12.1
Hospital out-patient	4.6	7.7	4.0	16.3	4.2	2.4	1.6	8.2	24.5
Private medical specialist(a)	8.6	10.6	7.6	26.8	3.0	3.1	1.0	7.1	33.9
Dentist	42.1	47.2	34.3	123.6	25.9	16.0	5.0	46.9	170.4
Therapist(b)	*6.2	6.6	5.4	18.2	3.3	3.6	0.7	7.7	25.8
Child population(c)	**75.4**	**84.3**	**60.3**	**220.0**	**44.4**	**28.3**	**10.2**	**82.9**	**302.9**

(a) Includes paediatrician, psychiatrist, and ear, nose and throat specialist. (b) Includes physiotherapist, chiropractor, and speech or other therapist.

Far North WA regions and, for out-patient attendance, in the Far North WA region.

OTHER SERVICES

Attendance at private medical specialists and community and child health centres differed across regions. As with use of general practitioner services, a greater proportion of Perth metropolitan children attended private medical specialists. On the other hand, a greater proportion of country children made use of community and child health centres in addition to having a higher use of hospital services.

ENDNOTES

1 Gee V. *Perinatal statistics in Western Australia: Midwives' notification system 1992*. Perth: Statistical Services/35, Health Department of Western Australia, 1993.

2 Callaghan AM. The prevalence of behavioural risk factors associated with sudden infant death syndrome. Perth: Edith Cowan University, 1994. Honours thesis.

3 Frankenberg WK, Dodds JB, Archer P, Bresnick B, Mashka P, Edelman N, Shapiro H. *Denver II Training Manual (Second Edition)*. Denver: Denver Developmental Materials Inc., 1990.

4 Berinson MR. A pilot study of the association between types of day care and the risk of respiratory and other illness. Perth: University of Western Australia, 1993. Honours thesis.

5 Vallentine J, Zubrick SR, Sly P. National trends in the use of stimulant medication for attention deficit disorder. *Journal of Paediatrics and Child Health* (under review).

3 DISABILITY

The causes of disabilities are many and varied. A given disability may be attributable to an intellectual, psychiatric, cognitive, neurological, sensory or physical impairment or a combination of these. A disability is permanent or likely to be so. It may be always present or episodic in its appearance. Most particularly, it is the reduction of the capacity of the individual for communication, social interaction, learning or mobility and a resulting need for continuing support services that are the defining features of a disability.

DISABILITY – LIMITATION OF INDEPENDENT FUNCTION

Over the past two decades, community, professional and institutional attitudes to, and definitions of, disability have changed significantly. Where once a list of conditions, injuries and illnesses served to define "handicap", the emphasis is now on the functional impact that these have on communication, social interaction, learning, mobility and the need for support. In the WA Child Health Survey, disability was considered in terms of limitation of independent function (see *Disability* in the Glossary). Children regarded as having a disability were those needing help with transport or activities of daily living, requiring supervision from someone in getting around the neighbourhood, limited in their play activities, or unable to walk.

Nearly one in twenty (5 per cent) Western Australian children aged 4 to 16 years were affected by one or more of these functional limitations.

TRANSPORT

Help with transport due to an illness, injury or medical condition was required by 1 per cent of children aged 4 to 16 years. Approximately 45 per cent of children with this limitation had required assistance for a long-term period (greater than six months), while another 40 per cent had always required help with transport.

ACTIVITIES OF DAILY LIVING

Nearly 1 per cent of children needed physical help with activities of daily living, such as eating, dressing, bathing and going to the toilet, for reasons other than age. Almost all children needing this help had either needed it always (66 per cent) or for a long-term period (29 per cent).

SUPERVISION

Only 1 per cent of children were considered to need help or supervision 'getting around the neighbourhood'. Almost 53 per cent of these had always needed this supervision, while 35 per cent had for longer than six months.

ABILITY TO PLAY

Almost 4 per cent of children were limited in the amount or type of activity they could perform with other children. This limitation had been present for greater than six months in 50 per cent of cases, and had always existed in 30 per cent of cases.

UNABLE TO WALK

The Survey identified so few cases of children who were unable to walk, that meaningful analysis of this specific group was not possible.

OTHER LIMITATIONS

VIGOROUS ACTIVITY

Problems with vigorous activity, such as running, jumping, lifting heavy objects and participation in strenuous sports, were experienced by nearly 8 per cent of 4 to 16 year-olds. Most commonly, these children had experienced this type of limitation for longer than six months (49 per cent), and 34 per cent had always had this limitation.

SCHOOL WORK

Almost 8 per cent of children in school were limited in the type or amount of school work

TABLE 3.1 Children with selected sensory and motor function problems: Proportion with functional limitations (Per cent)

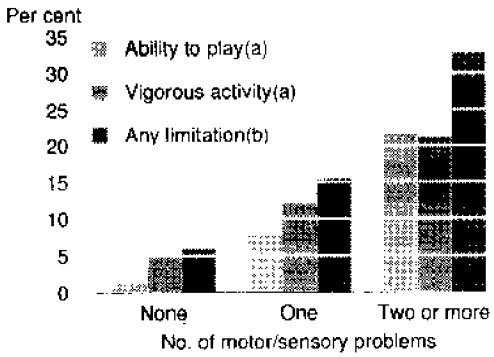
	Sensory and motor function problems					
Functional limitations	*Vision problems*	*Hearing problems*	*Speech problems*	*Mobility problems*	*Has pain*	*All children*
Needs supervision, or help with transport or activities of daily living	*2.9	*7.6	*10.0	60.3	*3.8	1.5
Limited ability to play	6.8	*13.8	*8.1	*58.2	20.3	3.9
Limited vigorous activity	8.2	*15.0	*9.9	69.0	24.8	7.5
Limited in school work	13.2	20.7	27.6	*49.5	16.2	7.4

they could perform because of physical, emotional or learning problems. This limitation was experienced among a greater proportion of males (9 per cent) than females (5 per cent). Also, for the majority with the limitation, it was something that had been experienced for a period longer than two years (73 per cent).

RELATIONSHIP TO SENSORY AND MOTOR FUNCTIONS

Figure 3.1 shows the relationship between functional limitation and sensory or motor function problems (involving vision, hearing, speech, mobility, or pain) (see *Sensory and motor function problems* in the Glossary). As might be expected, a strong positive relationship existed between these – of those 4 to 16 year-olds with no sensory or motor function problem, 6 per cent had at least one functional limitation. Among the population with one problem, this rose to 15 per cent and, for those children with two or more sensory or motor function problems, 33 per cent experienced at least one functional limitation.

FIGURE 3.1 Children with sensory and motor function problems: Proportion with selected limitations

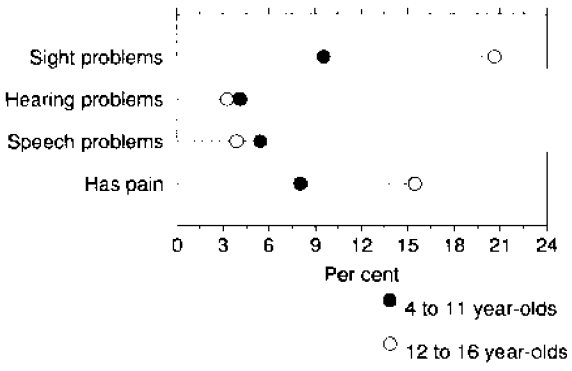


(a) Limited in this function. (b) One or more of the limitations pertaining to: transport, supervision, activities of daily living, ability to play, vigorous activity and school work.

The effect on independent functioning of problems relating to sight, hearing, speech, mobility and pain is illustrated in Table 3.1. Broadly, it shows that those children with a sensory or motor function problem were much more likely to experience a functional limitation than other children. Children who experienced pain, or who were restricted in mobility were the most affected, especially with regard to performing more vigorous physical activity, where 69 per cent and 25 per cent of them respectively had limitations. The ability to do school work was also markedly affected by a problem with a sensory or motor function.

SENSORY AND MOTOR FUNCTIONS

FIGURE 3.2 Prevalence of individual sensory and motor function problems by age

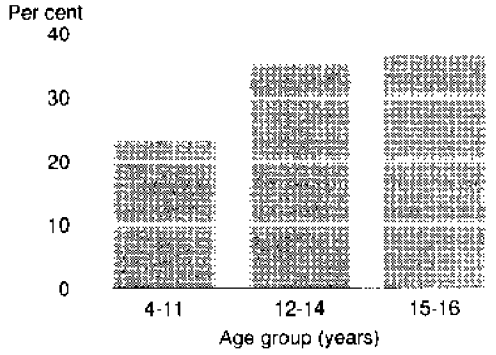


Over one in four (28 per cent) Western Australian children aged 4 to 16 years were limited in one or more sensory or motor functions.

The general picture of sensory and motor function problems from the WA Child Health Survey was one of increasing prevalence at successive age levels. Over 23 per cent of 4 to 11 year-olds had at least one sensory or motor

function problem. This proportion rose to 36 per cent for 12 to 16 year-olds.

FIGURE 3.3 Proportion with at least one sensory or motor function problem: Age



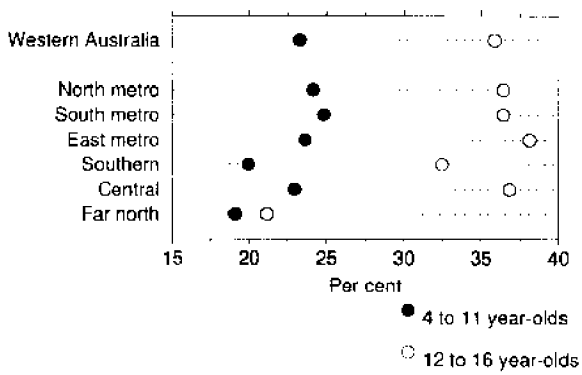
The number of children with at least one sensory or motor function problem living in the Perth metropolitan area was higher than that recorded for country children – 29 per cent compared with 25 per cent.

TABLE 3.2 Prevalence of sensory and motor function problems (Per cent)

Number of problems	*Perth metro*	*Country*	*Western Australia*
4 to 11 year-olds—			
None	75.7	79.1	76.7
One	19.9	18.2	19.4
Two or more	4.4	2.6	3.9
12 to 16 year-olds—			
None	63.1	67.3	64.2
One	29.8	25.1	28.6
Two or more	7.1	7.6	7.2
All 4 to 16 year-olds—			
None	**71.0**	**75.3**	**72.1**
One	**23.6**	**20.5**	**22.8**
Two or more	**5.4**	**4.3**	**5.1**

Figure 3.4 illustrates the differences in sensory and motor function problem levels across the six survey regions. Most areas had prevalence levels roughly equivalent to the State average. Exceptions were the Southern WA and Far North WA regions, which had lower levels for both younger children and adolescents.

FIGURE 3.4 Proportion with at least one sensory or motor function problem: Age and region



VISION

Visual impairments of one sort or another are common and do not necessarily result in functional limitation.

Nearly 14 per cent of 4 to 16 year-old children did not have normal vision in both eyes. Girls reported having this problem more frequently than boys (16 per cent compared with 11 per cent), but particularly among adolescents where 26 per cent of females and 15 per cent of males had this problem.

TABLE 3.3 Vision problems – children who do not have normal vision in both eyes

	4 to 11 year-olds		*12 to 16 year-olds*	
	No. ('000)	*Per cent*	*No. ('000)*	*Per cent*
Males	8.9	9.2	8.1	15.0
Females	9.5	9.9	14.7	26.0
Perth metro	14.0	10.2	17.2	20.7
Country	4.4	7.9	5.6	20.6
All children	**18.4**	**9.6**	**22.8**	**20.7**

Impairment in vision increased with age. Ten per cent of 4 to 11 year-olds had some degree of visual impairment compared with 21 per cent of 12 to 16 year-olds.

Over 9 per cent of 4 to 16 year-olds used prescribed glasses or contact lenses at the time of the Survey. This represented 70 per cent of those who indicated they did not have normal vision in both eyes. Once again, a higher proportion existed among the older age group, where 16 per cent of 12 to 16 year-olds used glasses (two-thirds of these were girls). This was

10 percentage points higher than the usage among 4 to 11 year-olds.

Wearing glasses or contact lenses does not guarantee normal function. Of those children wearing glasses or contact lenses, 14 per cent still had difficulty with reading a printed page and 13 per cent indicated they would have difficulty recognising a friend on the other side of the street.

An estimated 2,700 children were blind or unable to see in one eye, and another 1,400 were blind in both eyes.

Among children in the 4 to 11 year age group, three times as many boys as girls reported blindness. The reverse was true for 12 to 16 year-olds.

HEARING

TABLE 3.4 Hearing problems – children who do not have normal hearing in both ears

	4 to 11 year-olds		*12 to 16 year-olds*	
	No. ('000)	*Per cent*	*No. ('000)*	*Per cent*
Males	4.8	4.9	*2.2	4.1
Females	3.2	3.3	*1.4	*2.5
Perth metro	6.1	4.5	2.5	*3.1
Country	1.9	3.3	*1.1	*4.0
All children	**8.0**	**4.1**	**3.6**	**3.3**

Only 4 per cent of children did not have normal hearing in both ears (5 per cent for males, 3 per cent for females). Over half (53 per cent) of these were deaf or partially deaf in one ear only, and 34 per cent were deaf or partially deaf in both ears.

Almost all children who were deaf or partially deaf in one or both ears had experienced this condition always or for a period of over six months (41 per cent and 49 per cent respectively).

SPEECH AND LANGUAGE

The ability to communicate is a vital human endowment. Speech and language provide the foundation for the development of play, acquisition of social skills, and later, reading and writing. Once developed, these are skills used for the rest of life. Speech in particular allows individuals to change their environment by directing aspects of it. In this way, the impact of many disabilities is lessened.

Ten per cent of children were reported to have trouble saying certain sounds. Nearly 14 per cent of 4 to 11 year-olds had this problem, but this decreased to 3 per cent of the 12 to 16 year-old population. It was more likely that a child having trouble with certain sounds would be male, at younger age levels. Males comprised 65 per cent of 4 to 11 year-olds with this problem, but only 43 per cent among 12 to 16 year-olds.

Stuttering was reported among 4 per cent of children aged 4 to 16 years. In respect of age, 5 per cent of 4 to 11 year-olds and 2 per cent of 12 to 16 year-olds stuttered. The majority within each age group were males (66 per cent and 63 per cent respectively).

There were functional consequences in some children who were reported to have these speech difficulties. For 5 per cent of children, caregivers reported that people needed help to understand what they were saying. Sex and age differences existed in relation to these responses. Caregivers reported that other people needed help to understand the speech of boys twice as often as with girls. Younger children were slightly more likely to have difficulties being understood than were adolescents.

TABLE 3.5 Speech problems – children whose speech is difficult to understand

	4 to 11 year-olds		*12 to 16 year-olds*	
	No. ('000)	*Per cent*	*No. ('000)*	*Per cent*
Males	7.2	7.5	2.6	4.8
Females	3.3	3.4	*1.7	*3.0
Perth metro	8.0	5.9	3.0	3.6
Country	2.5	4.4	*1.3	4.7
All children	**10.5**	**5.5**	**4.3**	**3.9**

Girls were generally considered to have a better command of oral expression than boys. Nearly 41 per cent of girls (compared with 36 per cent of boys) were considered to speak or use words better than children their age.

The impact of speech problems on the ability to understand a child is striking: other people were more likely (odds ratio 15:1) (see *Odds ratios* in the Glossary) to need help understanding children who had trouble saying certain sounds. Parents of children who stuttered reported that

other people were more likely (odds ratio 7:1) to need help to understand their children.

MOBILITY

An estimated 1,400 children used either a wheelchair, artificial limb or brace, crutches, cane or walking frame to assist them in moving around.

PAIN

Almost 11 per cent of 4 to 16 year-olds experienced some physical pain or discomfort. A significantly higher proportion of adolescents experienced pain (15 per cent) in contrast with younger children (8 per cent). Pain was also experienced more commonly among girls than boys (13 per cent and 9 per cent respectively).

TABLE 3.6 Pain – children who experience physical pain or discomfort

	4 to 11 year-olds		*12 to 16 year-olds*	
Age	*No. ('000)*	*Per cent*	*No. ('000)*	*Per cent*
Males	6.0	6.1	7.3	13.6
Females	9.5	10.0	9.7	17.2
Perth metro	11.1	8.1	13.9	16.6
Country	4.4	7.9	3.2	11.8
All children	**15.5**	**8.0**	**17.1**	**15.5**

Pain was generally reported as being long-term, with 69 per cent of children having had pain for longer than six months and another 14 per cent having always had pain. The severity of pain most frequently experienced was relatively mild in nature, with 38 per cent and 39 per cent experiencing 'a little' and 'some' pain respectively, while 22 per cent of those with pain reported a 'great deal' of pain.

DAYS OFF SCHOOL

Problems with sensory and motor functions, such as sight and hearing, are likely to result in increased absences from school or work. As Table 3.7 highlights, a larger proportion of children who experienced difficulties with vision, hearing, speech and pain were absent for more than five days – 16 per cent of all children had more than five days off school or work in the last six months. This proportion was higher for those with vision problems (20 per cent), and higher again for those with hearing problems and pain (28 per cent each).

TABLE 3.7 Children with selected sensory and motor function problems: Days off school in last six months(a)
(Per cent)

	Sensory and motor function problems				
Days off	*Vision problems*	*Hearing problems*	*Speech problems*	*Has pain*	*All children*
None	33.9	*20.6	33.7	20.7	32.1
1-2	28.0	32.6	24.4	30.7	31.0
3-5	18.2	*18.3	24.7	20.5	20.8
6-10	14.0	*20.2	*16.0	16.5	11.0
11 and over	*5.9	*8.2	**1.2	11.6	5.1

(a) Days off due to illness, injury or medical condition. Includes days off work, for those working.

USE OF SERVICES

The proportion of 4 to 16 year-olds with specific disabilities who had utilised hospital and other services during the past six months is displayed in Table 3.8 below. In general, there was quite a significant increase in the use of health services as a result of problems with vision, hearing, speech, mobility and pain.

TABLE 3.8 Children with selected sensory and motor function problems: Use of services
(Per cent)

	Sensory and motor function problems					
Type of service	*Vision problems*	*Hearing problems*	*Speech problems*	*Mobility problems*	*Has pain*	*All children*
Hospital use	14.8	27.2	17.8	*67.3	20.5	14.5
General practitioner	60.0	75.7	64.0	*47.6	72.0	58.9
School counsellor	6.4	*7.7	*5.9	**0.0	7.1	4.6
Therapist(a)	10.2	*19.5	22.8	**35.3	13.6	8.5

(a) Includes physiotherapist, chiropractor, and speech or other therapist.

4 ADOLESCENT HEALTH RISK BEHAVIOURS

For the majority of adolescents, the ages between 12 years and 16 years are a time of marked psychological and social growth. The demands, expectations and temptations they encounter are more numerous and carry larger risks than those experienced by adolescents only a generation ago. By the age of 16 years, a significant percentage of Western Australian teenagers have tried marijuana, alcohol and cigarettes and many have become sexually active at an early age. The majority of adolescents engage in these behaviours only infrequently. However, when such behaviours become more frequent or enduring, they have the potential to put young people's health at risk and to restrict their future life prospects by disrupting the normal processes of development and the learning of life skills required for coping successfully in adult life.

DIET AND NUTRITION

Food and nutrition are fundamental determinants of health status. In affluent countries like Australia, many diet-related health problems are associated with over-consumption of major nutrients. High fat diets, for example, are associated with a substantially increased risk of obesity, heart disease, some types of cancer and other chronic conditions. High fat diets are often consumed at the expense of foods high in complex carbohydrates and dietary fibre which are considered conducive to good health. Because lifetime dietary patterns are established during youth, adolescents need to be encouraged to eat a variety of nutritious foods, eat plenty of breads, cereals, fruit and vegetables, and adopt diets which are low in fat, particularly saturated fats.[1]

To establish a profile of adolescents' current food choices, questions were asked about the food they ate during the day prior to the Survey. This included all meals and snacks eaten at home, at school or anywhere else from the time they got up to the time they retired to bed.

DAILY CONSUMPTION OF MAJOR FOOD GROUPS

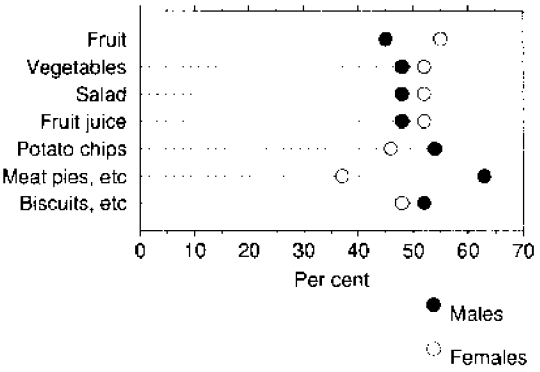
Fruit, cooked vegetables and green salad. For all adolescents in the day prior to the Survey:

- Three-quarters consumed fruit;
- Seventy per cent ate cooked vegetables;
- Forty-five per cent ate green salad; and
- Sixty-two per cent drank fruit juice.

High fats and refined sugars. For all adolescents in the day prior to the Survey:

- Forty-five per cent ate potato chips and crisps;
- Twenty-nine per cent consumed high-fat foods such as meat pies, sausages and hamburgers; and
- Seventy-three per cent ate foods high in refined sugars, such as biscuits, doughnuts, chocolate, ice cream, pies or sweets.

FIGURE 4.1 Adolescents: Food groups eaten during the day prior to the Survey



DIETS HIGH IN FATS AND REFINED SUGARS

Adolescents with high fat and high refined sugar consumption were identified by deriving a composite score based on the number of times in the day prior to the Survey that high-fat foods, potato chips or crisps and foods high in refined sugar had been consumed (see *Fat and refined sugar consumption* in the Glossary).

Just over 9 per cent (10,000) of adolescents were considered to have a high intake of fats and refined sugars. More boys (14 per cent) consumed high amounts of these foods than girls (5 per cent).

As adolescents grew older, the pattern of high fat and sugar consumption for males and females showed a distinct contrast. While 9 per cent of 12 to 14 year-old boys had high intake of these foods, the percentage increased to 21 per cent for 15 to 16 year-old boys. However, consumption remained at low levels for adolescent girls regardless of age.

LOW CONSUMPTION OF FRUIT, COOKED VEGETABLES AND GREEN SALAD

Adolescents who had low consumption of fruit, cooked vegetables and green salad were identified by deriving a composite score based on the number of times in the day prior to the Survey that these foods had been consumed (see *Fruit, cooked vegetables and green salad consumption* in the Glossary).

TABLE 4.1 Adolescents: Diet
(Per cent)

	Diet	
	High in fats or refined sugars	*Low in fruit, cooked vegetables, green salad*
Males—		
12 to 14 year-olds	9.1	20.2
15 to 16 year-olds	21.4	22.8
Females—		
12 to 14 year-olds	*6.6	14.7
15 to 16 year-olds	**2.5	31.1
All adolescents—		
12 to 14 year-olds	**7.8**	**17.4**
15 to 16 year-olds	**11.0**	**27.4**

One in five adolescents (21 per cent) consumed low amounts of fruit, cooked vegetables and green salad. The proportions of adolescent boys with low intake of these foods did not vary greatly with age. For female adolescents, those with low consumption of these foods increased from 15 per cent of 12 to 14 year-olds to 31 per cent among 15 to 16 year-old girls.

FUTURE DIRECTIONS

- **The finding that around three-quarters of WA adolescents ate fruit and cooked vegetables in the day prior to the Survey and less than half ate green salad, falls short of the objective of the *Goals and Targets for Australia's Health in the Year 2000 and Beyond* for 95 per cent of adolescents to eat these foods daily.[2] Emphasis should continue to be placed on community and school health education programs that promote foods associated with lower risks of various chronic diseases, obesity and poor dental health.**
- **A steady increase in the percentage of male adolescents consuming foods high in fat and refined sugars suggests that they are a risk population to whom health education and promotion programs should be specifically targeted.**

DIETARY BEHAVIOURS

Information was obtained from 12 to 16 year-olds about their weight and their self-perception of, and efforts to modify, body weight. Actions to modify body weight were examined to identify behaviours that could lead to:

- *eating disorders.* There has been concern about the apparent increase of the eating disorders anorexia and bulimia (see *anorexia* and *bulimia* in the Glossary) in recent years and the number of adolescent girls and young women who are developing unhealthy eating habits in pursuit of thinness;
- *other health problems.* Obesity acquired during childhood is also of particular concern as it may persist into adulthood, increasing later risk for chronic conditions such as diabetes, heart disease, high blood pressure, stroke, some types of cancer, and gall bladder disease. In addition, children often experience social and psychological stress related to obesity.

WEIGHT (BODY MASS)

The distribution of the mean self-reported weight (body mass) of Western Australian males and females aged 12 to 16 years is shown in the following table.

The mean body mass of 12 and 13 year-old male and female adolescents was essentially similar. From age 14, with the generally earlier onset of puberty in females, a greater variation in body mass occurred between the sexes. The mean

body mass of 14 year-old boys was 11 per cent greater than for 14 year-old girls. By the age of 16 years, it was 15 per cent greater.

TABLE 4.2 Adolescents – Mean body mass (Kg)

	Age (years)				
	12	*13*	*14*	*15*	*16*
Males	45.2	50.8	58.5	64.5	66.5
Females	45.5	51.0	52.7	55.8	57.8

RELATIVE WEIGHT (BODY MASS INDEX)

To determine the percentage of adolescents in the Survey who were either overweight or underweight, self-reported heights and weights were used to calculate a 'Body mass index' (BMI) using the formula: BMI = kg/m^2. Using intervals recommended in the 1994 World Health Organisation report on physical status,[3] the BMI scores were categorised into the five groups shown in Table 4.3 (see *Relative weight* in the Glossary).

TABLE 4.3 Adolescent body mass index

	Males		*Females*	
	No. ('000)	*Per cent*	*No. ('000)*	*Per cent*
Underweight—				
Very underweight	*3.9	7.3	3.2	5.7
At risk of underweight	4.8	9.1	*4.8	8.3
Total underweight	*8.7*	*16.4*	*8.0*	*14.0*
Acceptable weight	25.2	47.3	27.7	48.4
Overweight—				
At risk of overweight	*3.9	7.4	5.3	9.3
Obese	*2.1	*4.0	*3.2	5.7
Total overweight	*6.0*	*11.4*	*8.5*	*15.0*
Not available	13.2	24.9	12.9	22.6
Total	**53.1**	**100.0**	**57.1**	**100.0**

Around one-quarter (24 per cent) of 12 to 16 year-olds surveyed did not provide either their height or their weight. For adolescents who did report both height and weight:

- the majority (63 per cent of both males and females) had a body mass within the acceptable recommended range for height, age and sex;
- fewer than 6 per cent were classified as being 'obese'. However, there were an additional 11 per cent of adolescents who were 'at risk of overweight'. Taking these into account, 17 per cent (14,600) of 12 to 16 year-olds were at risk of adult obesity and the development of weight-related health disorders;
- in terms of below average weight, 8 per cent of 12 to 16 year-olds were found to be 'very underweight' and 11 per cent 'at risk of underweight'.

ADOLESCENTS' SELF-PERCEPTION OF THEIR WEIGHT

TABLE 4.4 Adolescents: Weight self-perception (Per cent)

Weight self perception	*Males*	*Females*	*All adolescents*
Underweight	19.0	13.6	16.2
About the right weight	62.1	42.1	51.7
Overweight	17.8	44.4	31.6
Total(a)	**100.0**	**100.0**	**100.0**
number ('000)	**53.1**	**57.1**	**110.3**

(a) Includes not stated.

Adolescents were asked how they thought of themselves in terms of their weight.

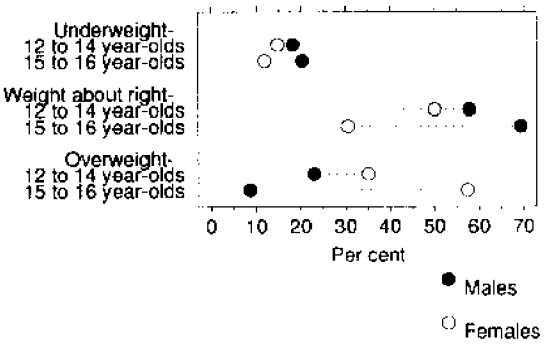
Just over half (52 per cent) of all adolescents perceived their weight as being about right. Another 32 per cent considered themselves to be overweight while 16 per cent considered they were underweight.

The majority of male adolescents (62 per cent) reported that they were about the right weight. The most common perception among females, however, was that they were overweight (44 per cent). Of those 12 to 16 year-olds who thought they were overweight, almost three-quarters (73 per cent) were girls.

Weight self-perception of younger and older adolescents showed some marked differences. Half of the younger female adolescents thought their weight was about right compared with less than a third of 15 to 16 year-old girls. Conversely, 35 per cent of 12 to 14 year-old girls thought they were overweight, but this

increased to 58 per cent among 15 to 16 year-olds.

FIGURE 4.2 Adolescents weight self-perception: Age groups



Boys' self-perception of their weight was markedly different. Around 58 per cent of younger males considered their weight to be about right, increasing to 69 per cent of 15 to 16 year-old boys. The proportion of boys who perceived themselves to be overweight decreased from 23 per cent for 12 to 14 year-olds, to around one in ten older adolescents.

When adolescent self-perception of their weight was compared with their body mass index:

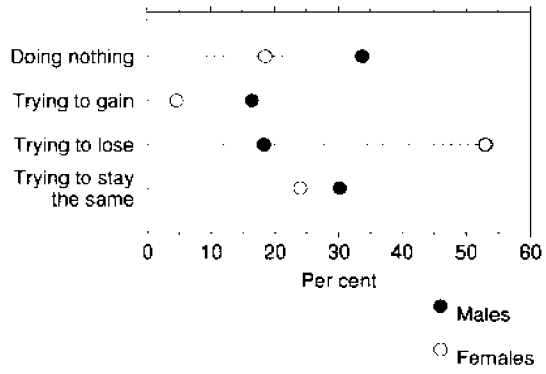
- *Underweight adolescents (i.e. 'at risk of underweight' and 'very underweight').* While 44 per cent considered themselves to be underweight, another 48 per cent thought they were about the right weight;
- *Overweight adolescents (i.e. 'at risk of overweight' and 'obese').* Overweight adolescents perceived their weight differently from underweight adolescents, the majority (73 per cent) considering themselves as being overweight.

WHAT ADOLESCENTS ARE DOING ABOUT THEIR WEIGHT

One in three (40,000) adolescents reported that they were trying to lose weight. Over three quarters (76 per cent) of this group were females.

Over half (53 per cent) of all adolescent girls reported trying to lose weight, compared with 18 per cent of adolescent males. Boys were fairly evenly divided between not doing anything about their weight (34 per cent) or trying to stay the same weight (30 per cent). Only one in ten 12 to 16 year-olds were trying to gain weight, with just over three quarters (77 per cent) being males.

FIGURE 4.3 Adolescents: Actions to deal with their weight



In terms of their body mass index:

- *Underweight adolescents.* The most common action among underweight males (37 per cent) was to try to gain weight. Among underweight girls, the most common action was to do nothing (37 per cent);
- *Overweight adolescents.* The majority of overweight adolescents (74 per cent) were trying to lose weight.

TABLE 4.5 Adolescents: Body mass index: Action to deal with their weight (Per cent)

	Body mass index			
Action to deal with weight	*Under-weight*	*About the right weight*	*Over-weight*	*Not available*
Do nothing	33.6	27.3	*18.8	21.7
Gain weight	26.7	7.4	**0.0	*11.4
Lose weight	*13.1	34.4	74.0	33.7
Stay the same	26.6	30.8	*7.2	30.5
All adolescents(a)	**100.0**	**100.0**	**100.0**	**100.0**
number ('000)	**16.7**	**52.8**	**14.6**	**26.1**

(a) Includes adolescents who did not indicate what they were trying to do about their weight.

Of the 36 per cent of adolescents who said they were trying to lose weight, most (81 per cent) chose to exercise, often in combination with dieting. Most males (62 per cent) trying to lose weight chose exercise alone. The most common weight loss method among adolescent girls was

a combination of exercise and dieting, a method preferred by 44 per cent.

FUTURE DIRECTIONS

- **These data provide a baseline for measuring progress towards objectives in the *Goals and Targets for Australia's Health in the Year 2000 and Beyond* – to increase the proportion of adolescents who maintain their weight within the recommended healthy weight range and for reducing the proportion of adolescents who have defined eating disorders.[2]**

- **Many female adolescents who are concerned about being overweight are not overweight at all. Over half of all adolescent females reported trying to lose weight when only 21 per cent had a body mass in excess of the recommended range. This highlights the extent to which the dietary behaviours of adolescent females and their self-perception of body weight are influenced by cultural stereotypes and other factors to the detriment of their current and future health.**

- **Health promotion strategies aimed at encouraging a healthy weight should avoid the double message ("don't be too thin"; "don't be too fat") which adolescent girls presently receive. Greater emphasis should be placed on health messages which empower young women to resist unrealistic and unhealthy stereotypes of the "desirable" female body weight. Alternative strategies should encourage them to reap the benefits of caring for their bodies through the adoption of healthy lifestyles.**

PHYSICAL ACTIVITY

The health benefits of sensible and regular exercise are now well recognised. Regular, moderate physical activity has been shown to increase life expectancy and to assist in the prevention and management of coronary heart disease, hypertension, diabetes, osteoporosis, obesity and mental health problems.[4] The Western Australian Child Health Survey examined the degree of participation by 12 to 16 year-olds in a range of physical activities.

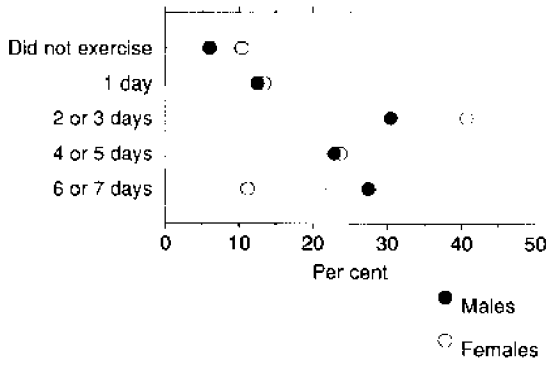
MODERATE EXERCISE

Just over half (52 per cent) of all adolescents engaged in moderate exercise during the day prior to the Survey. The proportion of males who engaged in moderate exercise was slightly higher than that for females - 54 per cent compared with 50 per cent. Moderate exercise consisted of walking or riding a bicycle for at least 30 minutes at a time (including walking or riding to and from school).

AEROBIC EXERCISE

For Survey purposes, aerobic exercise included exercises as well as vigorous sports activities (such as basketball, tennis, jogging, swimming, or fast bicycling) that resulted in the adolescent sweating or breathing hard. The Survey asked on how many of the past seven days the person had engaged in such activities or sports.

FIGURE 4.4 Adolescents who engaged in aerobic exercise over the seven days prior to the Survey



Nine out of ten adolescents had engaged in aerobic exercise during the week prior to the Survey. The proportion of males reporting having exercised was greater than that for females.

Over a third of 12 to 16 year-olds (36 per cent) had engaged in aerobic exercise on two or three of the past seven days. For females, 41 per cent exercised on two or three days compared with 31 per cent of males. Nearly one-quarter of adolescents (23 per cent) had participated in such exercise on four or five days while just under one in five (19 per cent) said they had done so on six or seven days. Over one-quarter (27 per cent) of males had exercised on six or seven days compared with only one in ten (11 per cent) of females.

Most males reported exercising over four to seven days (50 per cent). Female adolescents, however, exercised less frequently, mainly over one to three days (54 per cent).

PARTICIPATION IN ORGANISED SPORT

Apart from physical education classes at school, almost seven in ten adolescents (69 per cent) had played one or more sports during the past year in which they had received adult coaching or instruction. Most of this group had taken part in a single coached sport (40 per cent) or two such sports (27 per cent). Just over one-fifth (21 per cent) said they had participated in three or four coached sports and one in ten (12 per cent) had played five or more during the past year.

TABLE 4.6 Adolescents: Self-perception of sporting ability and participation in coached sports (Per cent)

	Adolescents' perception of their sporting ability compared with others their age			
Sports participation	*Below average*	*Average*	*Above average*	*Total(a)*
Played	28.4	64.3	81.7	68.9
Did not play	69.5	33.5	18.3	29.8
All adolescents(a)	**100.0**	**100.0**	**100.0**	**100.0**
number ('000)	**9.0**	**51.6**	**49.0**	**110.2**

(a) Includes not stated.

Regular participation in organised sport varied in proportion to self-perception of sporting ability. Adolescents who rated their sporting ability as below average compared with other children of the same age were significantly less likely to regularly participate in organised sport.

FUTURE DIRECTIONS

- **Objectives in the *Goals and Targets for Australia's Health in the Year 2000 and Beyond* recognise the importance of encouraging physical activity among children.[2] The objectives include increasing the proportion of children aged 5 to 18 years who participate at least three times per week in sport and other physical activity, and increasing the proportion who maintain levels of childhood physical activity throughout adolescence and early adulthood.**

- **With participation in organised sport shown to be associated with self-perception of sporting ability, more emphasis should be placed on providing opportunities for participation in non-competitively oriented sporting activities. These must place a greater premium on their social participation, health, fitness and enjoyment value to be an encouragement for more adolescents to maintain regular exercise.**

SUNBURN

Sun exposure is a leading cause of damage to the skin and a major contributor to the development of skin cancer. Reducing exposure to sunlight, particularly during childhood and adolescence, has been suggested as an effective means of reducing the incidence of skin cancer. Behaviours such as avoiding sun exposure in the middle of the day or using such protective measures as hats, protective clothing and effective sun screens reduce total sun exposure and thus the risk of skin damage.

Nearly three in five adolescents (56 per cent) reported suffering sunburn in the six months prior to the Survey. Of all 12 to 16 year-olds living in the Perth metropolitan area, 54 per cent had been sunburned within the last six months compared with 61 per cent of those living in country areas.

TABLE 4.7 Adolescents: Sunburn and actions taken to protect against sunburn (Per cent)

	Males	*Females*	*All adolescents*
Suffered sunburn—			
Perth metro	47.3	60.7	54.3
Country	66.3	56.3	61.3
Took action to cover up against the sun—			
Never or hardly ever	17.8	14.4	16.0
Fairly often	32.4	27.7	30.0
Always/nearly always	49.8	57.4	53.7

Taking action to cover up against the sun by using sunscreen, wearing a hat or using some other form of protection did not substantially

vary with age. Over half (54 per cent) of adolescents always or nearly always covered up when spending time in the sun - the majority of this group (55 per cent) being females. Another 30 per cent used protection fairly often. Only 16 per cent never or hardly ever used protection.

Of the groups which indicated they fairly often or nearly always used sun protection, the majority (59 per cent and 64 per cent respectively) still suffered some degree of sunburn. Of the group that always used sun protection, this proportion was just under half (46 per cent).

FUTURE DIRECTIONS

- **A major health goal is to reduce exposure to sunlight (ultra violet radiation) by 20 per cent.[5] The Survey provides estimates of the behaviours young people take in reducing their exposure to sunlight. They provide initial baselines against which progress in reducing risks associated with sun exposure can be measured.**

- **Other studies have shown that 16 per cent of people report suffering sunburn on a summer weekend.[6] In the Child Health Survey, 16 per cent of 12 to 16 year-olds reported never or hardly ever using sun protection. An overall target to reduce this figure to 10 per cent has been recommended.[2] The commitment to lower this figure should be advanced by better descriptions of exposure environments and the knowledge, attitudes and, most particularly, behaviours about sun protection in this target population.**

ALCOHOL CONSUMPTION

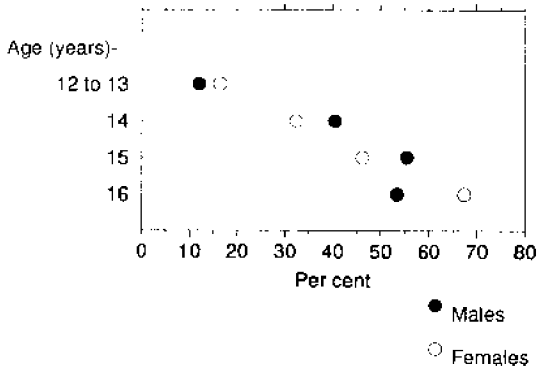
Alcohol is one of the most widely used drugs in Australia. There is evidence that early onset of regular drinking is associated with increased risk of adult alcohol misuse and a range of alcohol-related health and social problems. These include its role in road traffic accidents and other injuries, its contribution to overweight and obesity, increased blood pressure, some cancers, mental health disorders and suicide. Alcohol is a major contributing factor in two of every five divorces or marital separations and in violent crimes. Excessive alcohol consumption by pregnant women can also lead to mental retardation and congenital abnormalities in their babies.[7] As nearly all first use of alcohol occurs during the years of adolescence, the Survey asked questions about the age of initiation of drinking, the frequency of alcohol use, and the incidence of heavy drinking (see *Alcohol consumption* in the Glossary).

INITIATION OF DRINKING

Consumption of alcohol by 12 to 16 year-olds beyond the small amount permitted by their parents increased steadily with age. Fourteen per cent (6,500) of 12 and 13 year-olds reported having drunk more than just once or twice. By the age of 16 years, 61 per cent reported having drunk this often.

Of those 15 and 16 year-olds who reported having drunk more than just once or twice, just over a quarter (26 per cent) said they began drinking before the age of 13 years, around two in five (43 per cent) commenced when 13 or 14 years old, and one in five (21 per cent) did so when 15 or 16 years old.

FIGURE 4.5 Adolescents who had drunk alcohol more than just once or twice



DRINKING WITHIN THE PAST MONTH

In the month prior to the Survey, 18 per cent of 12 to 14 year-olds reported that they had drunk alcohol. For 15 to 16 year-olds, the proportion had risen considerably, to just under half (48 per cent).

Less than 3 per cent of 12 to 14 year-olds reported having drunk alcohol three or more times in the previous month. For 15 to 16 year-olds, the proportion had increased to 20 per cent with 60 per cent of these being females.

The majority of adolescents who drank between three and nine times within the past month were

female while those who drank ten or more times were predominantly male.

INTOXICATION WITHIN THE PAST SIX MONTHS

Just over 6 per cent of 12 to 14 year-olds reported having been drunk in the six months prior to the Survey. For 15 to 16 year-olds, the number jumped to one in three (35 per cent) of which the majority (59 per cent) were girls.

Over a quarter (26 per cent) of 15 to 16 year-olds reported having been intoxicated to the point of vomiting, with boys being more likely to have done so on more than one occasion.

TABLE 4.8 Adolescents: Alcohol consumption: Regular drinking and intoxication (Per cent)

	Age group (years)	
	12-14	*15-16*
Drinking within the past month(a)—		
Never drank	80.3	48.4
1-2 times	14.8	28.2
3-9 times	*1.7	13.2
10 or more times	**1.0	*7.0
Intoxicated (drunk) at any time within the past 6 months	6.4	35.2
Drunk causing vomiting since commenced drinking—		
Once	*4.4	14.1
More than once	**0.4	11.8

(a) Excludes frequency not stated.

While teenage drinking is common and mostly occurs at low levels and frequency, it is of concern that by the age of 15 or 16 years, one in five Western Australian adolescents were drinking regularly and one in four reported episodes of having been intoxicated to the point of vomiting in the six months prior to the Survey. It is important to note that similar rates of binge drinking and early onset of drinking were seen among boys and girls.

ALCOHOL CONSUMPTION: 1987-1993

Comparison with a 1987 population survey of drug and alcohol use by Perth teenagers suggests little change in adolescent alcohol consumption. In 1987, 72 per cent of Perth teenagers aged 15 to 16 years reported that they had drunk alcohol.[8] From the 1993 Child Health Survey, the comparable figure was 76 per cent.

FUTURE DIRECTIONS

- **Recent approaches to the problem of increasing alcohol consumption and over-consumption in adolescents are placing greater emphasis on reducing alcohol demand by providing the right education at an early age (from around 11 years of age).[9] The most successful programs have been carefully tailored to young teenagers' interests and concerns. More recent 'life-skills' education, included as part of the human biology, health education or physical education curricula, is proving to be a most effective early prevention approach. Its demonstrated effectiveness in reducing the onset of subsequent alcohol (as well as smoking and drug) use underscores the importance of reaching children at an early age.**

- **Strategies to reduce the proportion of adolescents who drink regularly at hazardous or harmful levels must also be rigorously pursued. Development of such strategies should recognize that much risk behaviour is powerfully reinforcing to adolescents as a means of asserting their independence and gaining status and acceptance from peers.**

- **The ability to minimise early initiation of adolescents into regular consumption of alcohol and to reduce the proportion who indulge in over-consumption will be important means of achieving the objective of the *Goals and Targets for Australia's Health in the Year 2000 and Beyond* to reduce the per capita consumption of alcohol by 10 per cent by the year 2000.[2]**

SMOKING

Smoking is widely acknowledged to be the single most preventable cause of premature death and disability. Approximately half of all smokers start smoking regularly before 18 years of age.[10]

The Western Australian Child Health Survey asked 12 to 16 year-olds whether they had ever smoked cigarettes more than just once or twice, the age at which they began smoking regularly,

and the number of cigarettes they had smoked in the day prior to Survey day. They were also asked if either of their parents currently smoked. This information was designed to help identify high-risk populations and better inform the targeting of smoking prevention programs for adolescent populations.

LIFETIME USE

TABLE 4.9 Adolescents who have smoked more than just once or twice (Per cent)

	Age (years)				All adolescents
	12-13	14	15	16	
Males	18.8	35.0	39.9	*37.9	29.2
Females	19.0	30.3	42.3	*30.7	28.5
Perth metro	19.9	33.4	38.9	29.1	28.2
Country	16.1	29.6	48.5	50.7	30.8
Whether parents smoked(a)—					
one or both smoked	25.4	48.4	51.8	63.4	41.6
neither smoked	13.7	*19.7	36.0	*17.3	20.2

(a) Excludes non-responses to the question which asked whether parents smoked.

The proportion of adolescents who had smoked tobacco more than just once or twice steadily increased with age. For those aged 12 to 13 years, 19 per cent of both boys and girls reported having smoked. For 16 year-olds, 38 per cent of males and 31 per cent of females reported they had smoked.

Of older adolescents (15 to 16 year-olds) in the Perth metropolitan area, a greater proportion of males (37 per cent) than females (31 per cent) had smoked more than once or twice. In country areas, the reverse was true - 54 per cent of females compared with 44 per cent of males.

Adolescents were more likely (odds ratio 3:1) to have smoked when one or more parents were smokers, than those whose parents were non-smokers.

REGULAR USE

The percentage of adolescents who smoked on the day prior to the Survey increased from around 4 per cent of younger adolescents to 16 per cent of older adolescents.

Fifteen per cent (16,900) of all adolescents said they had at some time smoked daily for a month or longer. Of these, 32 per cent had commenced smoking daily by the age of 12 years, 59 per cent by 13 years, 87 per cent by 14 years, and 96 per cent by the age of 15 years.

FUTURE DIRECTIONS

- **The fact that almost nine in ten adolescents who smoke regularly had commenced smoking daily by the age of 14 years highlights the importance of health promotion strategies being targeted to reach adolescents before this age. Ideally, such strategies should aim to foster positive attitudes towards self-care and protective behaviours in 11 to 12 year-olds.**
- **The significantly lower rates of smoking among adolescents whose parents did not smoke suggests that prevention programs targeting adults to quit smoking may also have the indirect effect of reducing the percentage of children who take up smoking.**

USE OF MARIJUANA

The health, social and economic consequences of drug use among teenagers is a cause of continuing community concern. Obtaining accurate figures on the extent of illicit drug use among teenagers poses a number of obvious problems. To encourage 12 to 16 year-olds to respond candidly to such sensitive questions as drug use, the Child Health Survey asked adolescents to provide the information themselves. The answers to these self-administered questions were returned in a confidential envelope. Ensuring confidentiality enabled questions to be asked about the frequency and age of initiation of marijuana, inhalants and other drug use.

MARIJUANA USE

Adolescents' use of marijuana rose steadily with age, increasing from around 7 per cent at 13 years old to 34 per cent at 16 years of age.

Although a sizeable proportion (18 per cent) of adolescents stated that they had tried marijuana, the frequency of use was generally low. Among the estimated 14,200 older adolescents who had

used marijuana, just over one-third (34 per cent) had not done so within the last year while 13 per cent had used it less than monthly. Just over one-quarter reported either monthly use (27 per cent) or weekly or daily use (26 per cent).

TABLE 4.10 Adolescents: Use of marijuana (Per cent)

	Age group (years)		*All*
	12-14	*15-16*	*adolescents*
	MALES		
Used marijuana	9.4	34.5	18.5
Frequency of use—			
Infrequent(a)	*7.4	*12.7	9.3
Regular(b)	**2.0	21.8	9.2
	FEMALES		
Used marijuana	*5.8	32.0	16.6
Frequency of use—			
Infrequent(a)	*2.9	18.0	9.1
Regular(b)	*2.9	*14.1	7.5

(a) Less than monthly. (b) Monthly, weekly or daily.

FACTORS ASSOCIATED WITH MARIJUANA USE

Parental income. Marijuana use, as with tobacco use, was found to vary with parental income. Its use was most prevalent in children from households with a parental income in the lowest income quintile (the lowest 20 per cent of parental incomes). Just over one quarter of adolescents (26 per cent) from this income group reported using marijuana. Adolescents in the middle income quintile were least likely to use marijuana (around one in ten). Just under one in five 12 to 16 year-olds from each of the remaining parental income quintiles reported its use.

School alienation. The use of marijuana also varied with 12 to 16 year-olds' attitudes about going to school. Adolescents who hated school or didn't like school were more likely to have used marijuana, compared with those who liked school to any degree.

School culture. Marijuana use was seen to change as school culture varied. In schools where they reported other students using drugs before and after school, adolescents were more likely to have used marijuana. Similarly, where students reported high levels of alcohol drinking at school, they were more likely to have used marijuana. In schools with high student vandalism or high levels of theft, student use of marijuana was correspondingly high. There were no apparent associations between marijuana use and student fighting or bullying.

DRUG USE AND DEPENDENCY

A broad spectrum of public and medical opinion exists regarding the risks associated with marijuana use by young people. At the one extreme, teenage experimentation has been seen as a 'stepping stone' to dependence and use of more damaging drugs.[11] The other view is that most teenage users of marijuana mature out of using this and other illicit drugs in their twenties. Although few would agree with earlier notions of inevitable progression in use, a benign view of regular marijuana use in teenagers has been challenged by recent data, which indicate that heavy teenage use carries a particular risk of continued heavy use in adulthood.[12,13]

FUTURE DIRECTIONS

- **Data from the Child Health Survey indicated that one-third of 15 to 16 year-olds had tried marijuana at some time, and that 18 per cent reported regular use. Unlike alcohol, there is no recommended safe level of marijuana use. Health messages for prevention of drug use and abuse are recommended to target particular groups, such as low and high income families, and specific environments such as schools known to be experiencing higher levels of drug use.**

KNOWLEDGE ABOUT AIDS/HIV AND SEXUAL BEHAVIOUR

Questions were asked of all adolescents (aged 12 to 16 years) to determine whether they had been taught about AIDS/HIV infection at school and whether they had talked about AIDS/HIV infection with parents or other adults.

Questions about sexual behaviour were only asked of older adolescents (aged 15 to 16 years) and aimed to describe the prevalence of sexual activity and age at first intercourse. For older adolescents who identified that they were sexually active, information was sought on the

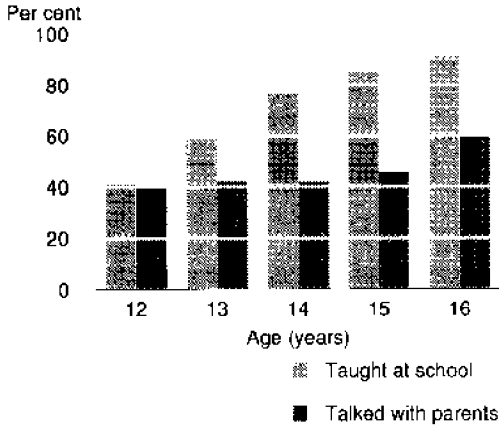
prevalence of unprotected sexual intercourse, use of condoms and other methods of contraception.

The rationale for asking these questions was that early sexual activity involves risks which include unwanted pregnancy and sexually transmitted diseases (STDs), including HIV infection, as well as negative effects on social and psychological development. A high proportion of teenage pregnancies are unintended and about half are estimated to end in abortion.[14] Pregnancies and births occurring among teenagers can compromise the health and life chances of both mother and child. STDs may also result in infertility, adverse effects on pregnancy outcome and maternal and child health, and facilitate HIV infection.

KNOWLEDGE ABOUT AIDS/HIV

Adolescents were asked if they had been taught about AIDS/HIV infection at school and if they had ever talked about AIDS/HIV infection with their parents or with another family adult.

FIGURE 4.6 Adolescents: Proportion who had been taught about AIDS/HIV infection at school or had discussed it with their parents: Age



Seven in ten adolescents had been taught about AIDS/HIV infection at school. Of all 12 year-olds, 41 per cent reported having been taught about AIDS/HIV infection. For 16 year-olds, the proportion had risen to 91 per cent. These data, of course, do not explore the specifics of this knowledge but merely indicate that some information about AIDS and HIV had been provided.

Acquisition of knowledge about AIDS and HIV from adults in the home was much less likely to occur. Less than half (46 per cent) of 12 to 16 year-olds had discussed AIDS or HIV with caregivers or other family adults. Less than two-thirds (61 per cent) of 16 year-olds had discussed the subject while, among 15 year-olds, less than half (46 per cent) had done so.

SEXUAL BEHAVIOUR

Sexual intercourse. One in five (8,400) older adolescents reported having ever had sexual intercourse, a proportion generally in keeping with previous Australian findings.[14] Of these sexually active adolescents, 21 per cent had intercourse for the first time at the age of 13 years or younger. A third (34 per cent) had intercourse for the first time at 14 years while 43 per cent reported their first experience when 15 or 16 years old.

No association was found between being taught about AIDS/HIV infection at school and the likelihood of sexual intercourse.

Method of contraception. Use of a condom by older adolescents at last time of intercourse was reported by 82 per cent of males. For females, 50 per cent reported that their partner had used a condom. Use of the condom by older adolescents living in the Perth metropolitan area was more prevalent, with 67 per cent reporting its use at the last time of intercourse compared with 56 per cent for country regions.

The main methods of contraception used by sexually active 15 to 16 year-olds at the last time of intercourse were the condom (54 per cent) and the pill (33 per cent). This result indicates an improvement over previous reports for this age group which showed a lower usage (70 per cent) of these two methods.[14] A small proportion (less than 10 per cent) reported that no method to prevent pregnancy was used.

Caregivers having problems with adolescent sexual behaviour. Principal caregivers were asked how frequently they had problems with their children's sexual behaviour. Responses were not provided for 10 per cent of 15 to 16 year-olds. For the remaining older adolescents, caregiver responses indicated that the incidence of such problems was rare, with nine in ten (92 per cent) of this adolescent group never having presented the parent with sexual behaviour problems. Just under one in six (17 per cent) of these adolescents separately reported having had sexual intercourse.

FUTURE DIRECTIONS

- **The *Goals and Targets for Australia in the Year 2000 and Beyond* specifically identifies sexually active young people as a priority group for preventive measures to reduce the incidence of STDs and unwanted pregnancies.[2] For reductions in unintended pregnancies to occur, adolescents need to be well informed about sexuality, contraception and safe sexual practices; to have access to appropriate contraceptive methods; and to regularly use effective contraception.**
- **Reducing the proportion of adolescents who are sexually active at an early age has also been shown to result in lower rates of STDs and improvements in child and maternal health.[4]**

ASSOCIATION BETWEEN HEALTH RISK BEHAVIOURS

Adolescents who displayed one health risk behaviour were much more likely to display other health risk behaviours.

Adolescents who smoked regularly were more likely to have also drunk alcohol regularly, to have used marijuana or to have had sexual intercourse.

Similarly, adolescents who drank alcohol regularly were more likely to have used marijuana, to have smoked regularly, to have had sexual intercourse, to have had police contact, to have been to a children's court or to have had an official police warning.

FUTURE DIRECTIONS

- **The strong relationship between health risk behaviours has important implications for the design of programs of prevention. It suggests that far more effective targeting of these programs can be achieved if the whole range of risk behaviours is considered, rather than simply focusing on a single behaviour. However, this will require identifying modifiable causal risk factors which are common to each of the specific health risk behaviours.**

ENDNOTES

1 National Health and Medical Research Council Panel to Review the Dietary Guidelines. *Dietary Guidelines for Australians. Draft Report*. Canberra: National Health and Medical Research Council, 1992.

2 Nutbeam D, et al, eds. *Goals and Targets for Australia's Health in the Year 2000 and Beyond*. Commonwealth Department of Health, Housing and Community Services. Canberra: Australian Government Publishing Service, 1993.

3 World Health Organisation. *Report of the WHO Expert Committee on Physical Status: Use and Interpretation of Anthropometry*. Geneva: WHO, 1994.

4 Department of Health and Human Services, Health Promotion Service. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. Washington, DC, 1990.

5 English D, Armstrong B. (1988) and Marks R, Lolley D, Lecatsas S, et al (1990). *National Cancer Prevention Policy*. Australian Cancer Society, 1991:29.

6 Hill D, Theobald T, Borland R. *Summer activities, sunburn, sun-related attitudes and precautions against cancer. A survey of Melbourne residents in the summer of 1987-88*. Melbourne: Centre for Behavioural Research in Cancer, Anti-Cancer Council of Victoria, 1990.

7 Hetzel BS. Alcohol, health and disease. In: Nestel P, ed. *Diet, Health and Disease in Australia*. Australian Academy of Science. Sydney: Harper and Row, 1987.

8 Lo SK, Blaize-Temple D, Binns CW. Perth teenage drug consumption: Differences between students and non-students. *Drug Education Journal of Australia*, December, 1989.

9 Falco M. *The Making of a Drug-Free America: Programs that Work*. New York: Times Books, 1992.

10 Joycelyn Elders M, Perry CL, Eriksen MP, Giovino GA. The report of the Surgeon General: Preventing tobacco use among young people. *American Journal of Public Health* 1994;84:543.

11 Bailey GW. Perspectives in drug abuse in youth. *Journal of the American Academy of Child and Adolescent Psychiatry* 1989;28:151-162.

12 Kandel DB, Yamaguchi K, Chen K. Stage of progression in drug involvement from adolescence to adulthood: further evidence for the Gateway theory. *Journal of Studies into Alcohol* 1992;53:447-457.

13 Burke KC, Burke JD, Reiger DA, Rae DS. Age at onset of selected mental disorders in five community populations. *Archives of General Psychiatry* 1990; 47: 511-518.

14 Cubis J, Lewin T, Raphael B. Correlates of pregnancy and sexual experience in Australian adolescents. *Journal of Psychosomatic Obstetrics and Gynaecology* 1985; 4: 237-254.

5 MENTAL HEALTH

5.1 PREVALENCE OF MENTAL HEALTH PROBLEMS

Mental health problems are commonly revealed in disturbances of feelings, behaviours and thoughts. A problem is identified when it results in distress to the child or others, or when coping, competency and mastery are impeded.

The Western Australian Child Health Survey sought information on children's behaviour from caregivers, teachers, and from 12 to 16 year-olds themselves. Caregiver and teacher responses to a Child Behaviour Checklist (see Appendix A – A Guide to the Field Instruments) generated a score for each of eight common child mental health problems and a total score (see **Behavioural syndromes** *and* **Mental health morbidity** *in the Glossary) which was used as a predictor of mental health. A range of other questions tested respondents' own perceptions of children's emotional and behavioural problems.*

MENTAL HEALTH PROBLEMS

TABLE 5.1 Children with mental health problems

	Number ('000)	*Per cent*
Males	30.0	20.0
Females	23.5	15.4
4 to 11 year-olds	30.8	16.0
12 to 16 year-olds	22.7	20.6
All children	**53.5**	**17.7**

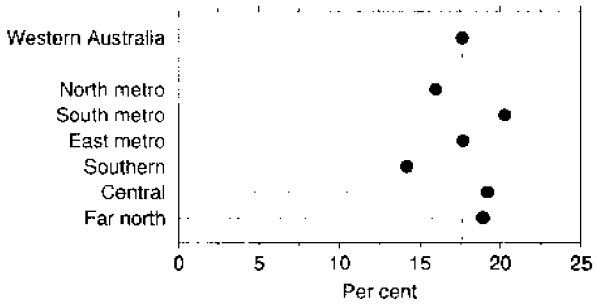
Mental health problems were determined when the total number of behavioural and emotional problems recorded on the Child Behaviour Checklist exceeded what is commonly seen in children of the same age and sex. More than one in six children (an estimated 53,500) were identified as having a mental health problem in the six months prior to the Survey. Scores indicating a mental health morbidity were more likely among 12 to 16 year-olds (21 per cent) than among younger children (16 per cent).

Boys had a higher estimated prevalence of mental health problems than girls (20 per cent compared with 15 per cent).

REGIONS

The proportions of children with mental health problems varied between the regions of Western Australia, from 14 per cent in the Southern WA region, to 20 per cent in the South metropolitan region.

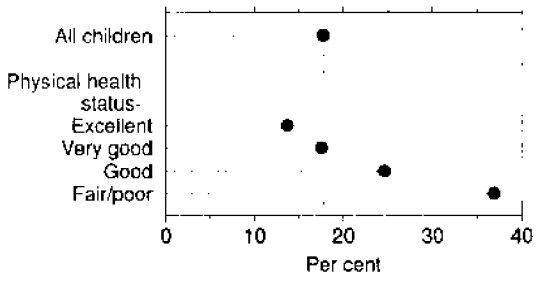
FIGURE 5.1 Children with mental health problems: Regions



RELATIONSHIP TO PHYSICAL HEALTH

As shown in Figure 5.2, children whose parents rated their general health as fair or poor were much more likely to have mental health problems.

FIGURE 5.2 Physical health status: Proportion with mental health problems



Of the group of children with mental health problems, one in ten (4,800) had fair or poor physical health compared with 3 per cent (8,200) of children without mental health problems.

SPECIFIC MENTAL HEALTH PROBLEMS (BEHAVIOURAL SYNDROMES)

TABLE 5.2 Children with mental health problems: Number of problems

	Number ('000)	*Per cent*
Number of mental health problems—		
No specific problem(a)	5.4	10.0
One	11.9	22.2
Two	11.1	20.7
Three	11.8	22.1
Four	5.5	10.2
Five	4.2	7.9
Six	*2.2	*4.0
Seven	**0.7	**1.3
Eight	*0.8	**1.4
Total	**53.5**	**100.0**

(a) Children who had a generally high level of problems without falling into any of the eight specific types of mental health problems.

Children with a mental health problem may have one or more types of problem. Of the 18 per cent of children identified as having a mental health problem, only 22 per cent had one behavioural syndrome, another 21 per cent had two types of problem, while 47 per cent had three or more types of problem.

Eight of the major problems that commonly occur in children are reported here.

DELINQUENT BEHAVIOUR

Delinquent behaviours are those that result in breaking rules and norms set by parents and communities. Characteristically they involve major transgressions: lying, cheating, stealing, and truancy are some of the behaviours that children with this mental health problem exhibit. Delinquent behaviour was reported for almost one in ten children.

THOUGHT PROBLEMS

Strange behaviours, ideas, or obsessions are not unusual at some point in a child's development. When, however, they impede the normal activity and expectation of development, they constitute a mental health problem. Overall, about 9 per cent of children were reported as having thought problems. Adolescents (10 per cent) were more likely to report behaviour which reflected this condition than younger children (8 per cent).

ATTENTION PROBLEMS

Children with attention problems may act young for their age, have difficulty concentrating or sitting still, suffer from clumsiness and have poor school work. Six per cent of children had attention problems. They affected adolescents more than younger children (almost 8 per cent compared with 5 per cent), but little variation between the sexes was evident. Attention deficit disorder, which falls into this group of problems, is a specific mental

TABLE 5.3 Children with mental health problems: Type of problem (Per cent)

	Sex		*Age group (years)*		
	Males	*Females*	*4-11*	*12-16*	*All children*
Delinquent problems	10.5	8.5	10.1	8.6	9.5
Thought problems	9.6	7.6	7.5	10.4	8.6
Attention problems	6.6	5.9	5.5	7.6	6.3
Social problems	7.0	4.7	5.7	6.0	5.9
Somatic complaints	7.0	3.1	4.7	5.6	5.0
Aggressive behaviour	4.2	3.2	3.1	4.6	3.7
Anxiety/depression	4.7	2.6	3.0	4.8	3.6
Withdrawn	3.1	*2.1	2.5	*2.7	2.6
All mental health problems	**20.0**	**15.4**	**16.0**	**20.6**	**17.7**

health diagnosis which will be the subject of further research from the Child Health Survey.

SOCIAL PROBLEMS

Getting along with peers, other adults, and siblings is an important skill. When there are persisting and severe problems that result in the breakdown of normal social development, children are said to have social problems. Survey responses indicated that 6 per cent of children were affected with these problems. There was little variation between age groups or the sexes, of children with this condition.

SOMATIC COMPLAINTS

Chronic physical complaints without a known and medically verified basis constitute this mental health problem. Somatic complaints were reported for 5 per cent of children. Boys were more affected with somatic complaints than girls – 7 per cent compared with 3 per cent.

AGGRESSIVE BEHAVIOUR

Many behaviours can be aggressive. Bullying, teasing, temper tantrums, arguing, as well as fighting and threatening are some of the behaviours included in this category. Aggressive behaviour was reported for less than 4 per cent of all 4 to 16 year-olds.

ANXIETY/DEPRESSION

Being lonely, fearful, feeling unloved and worthless are some of the indicators for anxiety or depression. Four per cent of children had responses which indicated anxious or depressed behaviour.

WITHDRAWN

Shy, sad, withdrawn and sulking are some of the complaints parents and teachers may make about a child who is withdrawn. Behaviour indicating this condition was reported for less than 3 per cent of all children in the Survey.

SEVERITY

In addition to filling out behaviour checklists, principal caregivers and teachers were asked directly if they thought children had experienced emotional or behavioural problems in the past six months. Caregivers and teachers were also asked if these problems were more than those expected for children of this age, and how distressful these mental health problems were.

TABLE 5.4 Children with mental health problems: Severity – caregiver and teacher assessment

	No. ('000)	*Per cent*
Problems serious in terms of—		
Causing distress to self	22.5	42.0
Causing distress to others	20.5	38.3
Preventing the child from doing things usually expected of children of this age	15.0	28.1
Need professional help with these problems	19.6	36.7

For the 18 per cent of children identified with mental health problems, caregivers and teachers reported that:

- Forty-two per cent of them were somewhat seriously or seriously distressed by the problem;
- Emotional or behavioural problems in 38 per cent of these children caused serious or somewhat serious distress to other people;
- Twenty-eight per cent of these children were impaired in their abilities to do normal things expected of children their age;
- Thirty-seven per cent of children with mental health problems were seen by their parents and teachers to need professional help.

If distress or impairment or the need for professional help are used to determine severity, then 52 per cent of children with mental health problems have serious problems.

ADOLESCENTS' SELF ASSESSMENT

In the Youth Self-report form, adolescents were asked directly if they thought they had experienced emotional or behavioural problems in the past six months. They were also asked if they had more problems than others of their age and whether they needed professional help with them.

Of the 21 per cent (22,700) of adolescents identified with mental health problems:

- Nearly a quarter (23 per cent) reported that they had more problems than others of their age;
- Nine per cent of them said they felt they needed professional help.

ADOLESCENT WELL-BEING

The development of good health, mental health and well-being takes place along with making friends, socialising and securing a place among family, friends and teachers. Many of the tasks of development through the life span are made easier when individuals associate with others and have their help.

SOMEONE TO CONFIDE IN

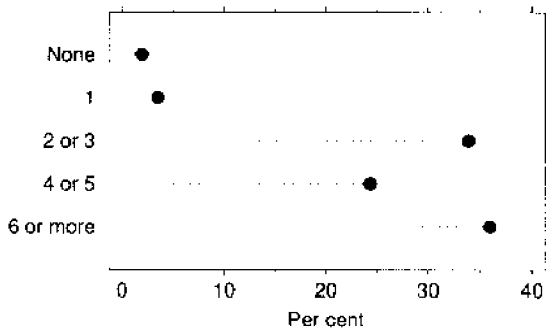
Most 12 to 16 year-olds (84 per cent) reported that they had a confidant, most commonly a friend (58 per cent), or parent (45 per cent). One in seven teenagers, however, had no-one that they could talk to or confide in about themselves or their problems. A high proportion of these adolescents (27 per cent) experienced mental health problems.

SOCIALISING

One in twelve adolescents reported that they never did things with friends outside of school hours; 20 per cent socialised out of school on one day a week; 39 per cent on two to three days a week; 20 per cent on four or five days, and 13 per cent on six or seven days.

CLOSE FRIENDS

FIGURE 5.3 Adolescents: Numbers of close friends



Almost all 12 to 16 year-olds (98 per cent) reported that they had at least one close friend. Many reported having six or more close friends (36 per cent); 58 per cent had between two and five; and less than 4 per cent had just one close friend.

RELATIONSHIPS

....WITH FRIENDS

When asked how well they got on with other kids (friends and classmates) during the previous six months, most adolescents (51 per cent) reported no problems, and 44 per cent only occasional problems. Four per cent of 12 to 16 year-olds reported that they experienced fairly

TABLE 5.5 Adolescent relationships (Per cent)

	Sex		*Age group (years)*		
	Males	*Females*	*12-14*	*15-16*	*All adolescents*
How well have you been getting on with friends—					
No problems	52.8	50.1	53.2	48.6	51.4
Occasional problems	41.4	46.3	42.6	46.0	43.9
Constant or fairly frequent problems	*5.3	*3.4	*4.0	*4.8	4.3
How well have you been getting on with teachers—					
No problems	49.3	56.9	56.9	47.5	53.2
Occasional problems	37.3	36.0	36.1	37.5	36.6
Constant or fairly frequent problems	10.0	*4.0	*6.3	*7.8	6.9
How well have you been getting on with family—					
No problems	45.6	32.5	42.8	32.4	38.8
Occasional problems	47.4	54.5	49.2	54.1	51.1
Constant or fairly frequent problems	*6.4	12.4	7.4	12.8	9.5

frequent or constant problems with other children.

....WITH TEACHERS

Most 12 to 16 year-olds (53 per cent) reported that they'd had no problems with their teachers over the previous six months; 37 per cent had had occasional problems; while for 7 per cent, the problems had been fairly frequent or constant. More girls (57 per cent) reported no problems with teachers than boys (49 per cent).

....WITH FAMILY

Adolescents were more likely to report problems within their families. While 39 per cent experienced no problems with their family during the past six months, 51 per cent reported occasional problems; and 9 per cent, fairly frequent or constant problems.

Girls were more likely to experience problems in getting on with their families. Whereas 47 per cent of boys reported occasional problems, this was the case with 54 per cent of girls; and more girls reported fairly frequent or constant problems (12 per cent compared with 6 per cent of boys).

Adolescents' relationships with their family members deteriorated with age. Among 12 to 14 year-olds, 43 per cent had no problems getting on with their families. For 15 and 16 year-olds, this proportion had decreased to only 32 per cent.

FEELINGS ABOUT LIFE

As adolescents move into adulthood, they should be entitled to feel happy and confident and have a purpose in their life. Over two-thirds of all 12 to 16 year-olds expressed agreement with the statements that they were happy with things in their life right now (67 per cent), that they felt confident things would improve in their life (71 per cent), and that their life had purpose and meaning (68 per cent). About one-fifth were uncertain while a small number disagreed with the statements (7 per cent, 4 per cent and 6 per cent respectively). The data, in general, do not support a view that young people are characterised by a discouraged, cynical and doubtful outlook on the future.

While typically referred to as "adolescence", the years between the ages of 12 years and 16 years result in changes in biology, social awareness and outlook. There are many differences between 12 year-olds and 16 year-olds despite the common experience of adolescence. The pattern of these differences is seen in personal outlook.

TABLE 5.6 Adolescents: Responses to questions regarding their life
(Per cent)

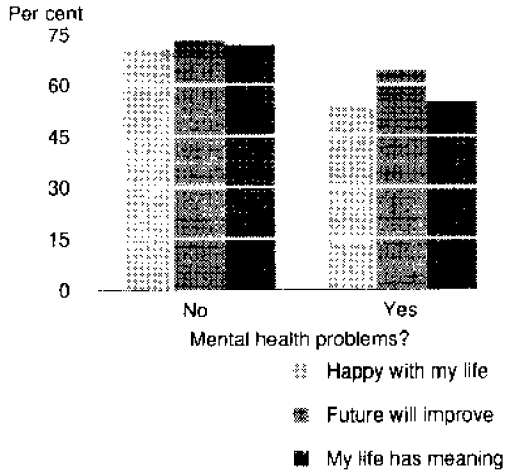
	Agree	*Uncertain*	*Disagree*
12 TO 14 YEAR-OLDS			
Happy with life right now	71.1	21.1	*5.3
Confident things will improve in future	74.5	19.9	3.2
My life has purpose and meaning	73.1	19.1	*4.8
15 TO 16 YEAR-OLDS			
Happy with life right now	60.8	22.8	*10.1
Confident things will improve in future	65.4	22.9	*5.4
My life has purpose and meaning	60.3	26.2	*7.2

Adolescents aged 12 to 14 years had a more optimistic view of their life than adolescents aged 15 to 16 years. A higher proportion of younger adolescents (71 per cent) were happy with how things were in their life right now. They were also more likely to agree that things would improve in their life, and that their life had purpose and meaning.

Certainly some of the decline in optimism between early and late adolescence represents increasing maturity and experience. For others, however, doubts about personal happiness, confidence and what the future holds may represent failures in family, community and educational experiences. Some of this is seen in the higher prevalence of mental health problems in young people who are uncertain or disagree that their future is bright.

Well-being is also associated with mental health. Figure 5.4 illustrates that adolescents without mental health problems were more likely to have a positive outlook on their life presently, and a more optimistic view of their life in the future.

FIGURE 5.4 Adolescents: Mental health problems: Feelings about life



5.2 STRESS AND MENTAL HEALTH IN ADOLESCENTS

It is commonly assumed that stress is bad for both physical health and mental health. Stress, and any consequent effect it may have on health outcomes, is more a matter of the amount of stress and the ability of the individual to manage it. Few would claim that life should or can be totally without stress. Some level of stress provides motivation and activity and leads to mental and physical exertion and fatigue. However, as stress exceeds our capacity to manage, activity increases, physical and mental exertion become extreme and exhaustion results. If left unattended, the end result may be breakdown.

In this Section, the relationships between stress and health on the one hand and family, community and school on the other are examined.

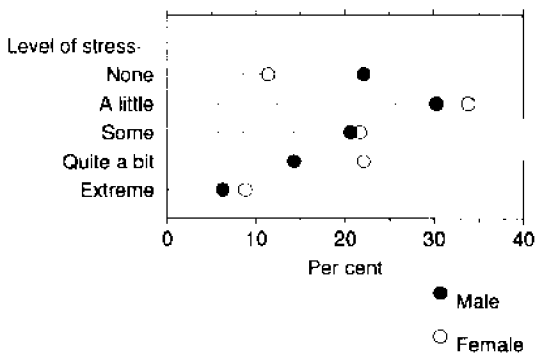
EXPERIENCING STRESS

Adolescents were asked if they had felt under strain, stress or pressure during the six months prior to the Survey (see *Stress* in the Glossary for a more complete description of the categories of stress used in this Section).

Most commonly, 12 to 16 year-olds (32 per cent) reported feeling a little stress, which they considered to be about usual. Around one in five felt some stress (21 per cent) or quite a bit of stress (18 per cent), while 8 per cent (or 8,300) of adolescents reported feeling extreme stress (almost more than they could take).

A greater proportion of male adolescents felt no stress at all – around one in five (22 per cent) compared with one in nine females (11 per cent). The proportion of girls reporting quite a bit of stress (22 per cent) was greater than that for boys (11 per cent). For all other 12 to 16 year-olds, levels of stress felt by males and females were fairly similar.

FIGURE 5.5 Levels of stress experienced by adolescents



STRESS AND PHYSICAL HEALTH

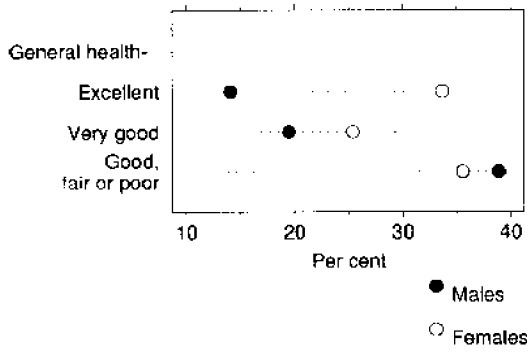
TABLE 5.7 Adolescents: General health: Levels of stress (Per cent)

	General health		
Stress level	*Excellent*	*Very good*	*Good, fair or poor*
Low	52.7	50.1	34.6
More than usual	18.3	26.0	17.8
High	24.3	22.6	37.3
All adolescents(a)	**100.0**	**100.0**	**100.0**
number ('000)	**50.0**	**41.8**	**18.5**

(a) Includes adolescents who did not report their level of stress.

Among adolescents whose principal caregivers rated their general health as excellent, just under one-quarter (24 per cent) reported feeling high stress compared with 37 per cent whose general health was rated as good, fair or poor.

FIGURE 5.6 Adolescents: General health: Proportion who felt high stress

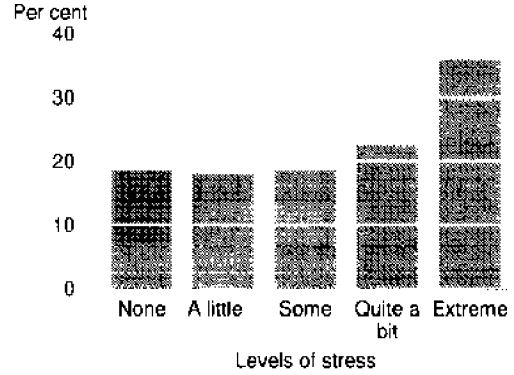


Among the group of adolescents whose general health was described as excellent, a significantly larger proportion of females (34 per cent) felt high stress compared with males (14 per cent). However, as health status deteriorated, the difference in high stress levels between the sexes became negligible.

STRESS AND MENTAL HEALTH

Of those 12 to 16 year-olds who reported feeling extreme levels of stress, over one-third (36 per cent) were found to have mental health problems. As levels of stress reduced, the proportion of adolescents with mental health problems dropped markedly to remain fairly constant at around 18 per cent. This compares to a level of mental health problems for the total adolescent population of 21 per cent. It was only when stress reached high levels that mental health was found to be compromised.

FIGURE 5.7 Adolescents: Levels of stress: Proportion with mental health problems

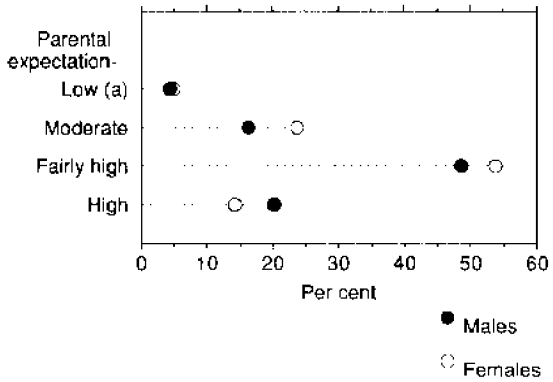


Where stress levels of 12 to 16 year-olds were high, the most prevalent mental health problems were thought problems and delinquency problems. These were also the most commonly occurring behavioural syndromes among all adolescents.

PARENTAL EXPECTATIONS

It is commonly held that parental expectations are a source of stress. Adolescents were asked to rate their parents' expectations of them on a scale from none to high (for more detailed information, see *Parental expectations* in the Glossary).

FIGURE 5.8 Adolescents: Parental expectations



(a) Includes both low and fairly low parental expectations.

Very few 12 to 16 year-olds reported low parental expectations (5 per cent or 5,100). The

majority of all adolescents (51 per cent) reported fairly high parental expectations while another 17 per cent (18,800) rated their parents expectations as high.

In the main, there was little difference between the sexes in their reporting of parental expectations.

TABLE 5.8 Adolescents: Parental expectations: Levels of stress (Per cent)

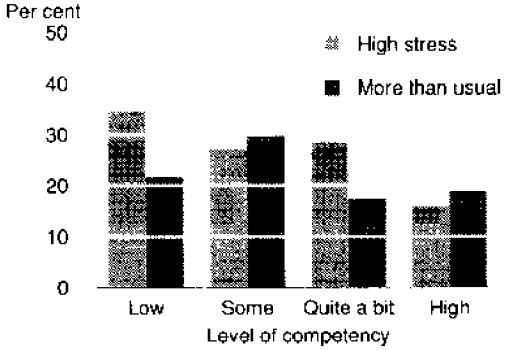
	Parental expectation		
Stress level	*Low to moderate*	*Fairly high*	*High*
Low	49.0	51.0	48.7
More than usual	24.6	22.5	18.1
High	24.8	25.7	32.8
All adolescents(a)	**100.0**	**100.0**	**100.0**
number ('000)	**27.4**	**56.6**	**18.8**

As Table 5.8 shows, an increase in parental expectations from low to fairly high had virtually no impact on the level of stress felt by 12 to 16 year-olds, with one in four experiencing high stress. This proportion increased marginally to one in three when parental expectations were reported to be high.

STRESS AND COMPETENCY

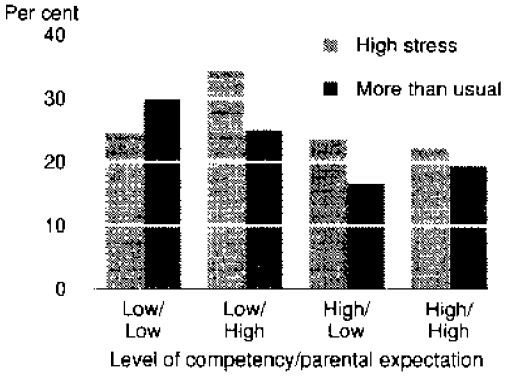
Competency is the ability to adequately manage life's problems and challenges. It is a set of acquired skills learnt through teaching and by example. Competency levels of adolescents in the WA Child Health Survey were derived from self-reported information (for more detail, refer to the section *Competency* in the Glossary).

FIGURE 5.9 Adolescents: Competency levels: Levels of stress



Being able to manage life's problems and challenges well was shown to be associated with lower levels of stress. Of those 12 to 16 year-olds with a high level of competency, 16 per cent reported feeling high stress. However, over one-third (35 per cent) of those adolescents who reported low competency felt high stress.

FIGURE 5.10 Adolescents: Level of competency and parental expectations: Levels of stress



In Figure 5.10, levels of stress were viewed in the context of both the competency of adolescents and their rating of parent's expectations.

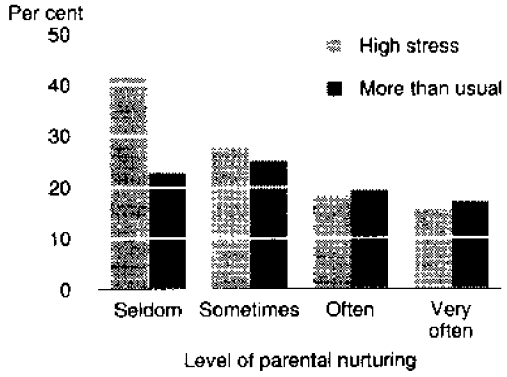
The adolescent group most commonly reporting high stress – just over one in three (or 34 per cent) – were those who had low levels of competency and high parental expectations. Of the group of adolescents who reported high parental expectations but high competency, the proportion feeling high stress was down to around one in five (22 per cent).

PARENTING STYLE AND STRESS

Parenting styles differ from family to family and within families. In the WA Child Health Survey, 12 to 16 year-olds were asked to report how often their parents used a range of parenting behaviours towards them in the six months prior to the Survey. This enabled commonly occurring parenting behaviours to be identified.

A frequently occurring style of parenting behaviour was one characterised by high levels of encouragement and support for the adolescent during their upbringing, a parenting style termed "nurturing" (for more information, refer to the section *Parental nurturing style* in the Glossary).

FIGURE 5.11 Adolescents: Parental nurturing levels: Levels of stress

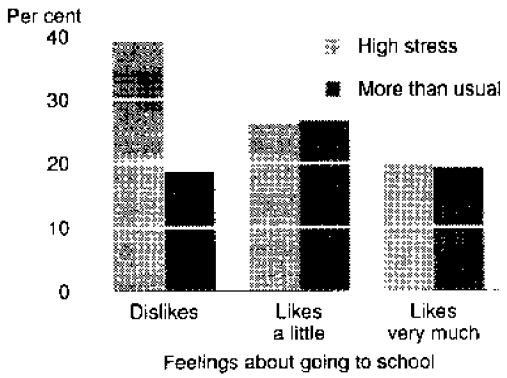


One aspect of the family environment that helped protect adolescents from high stress was a nurturing parental style. Adolescents who received higher levels of nurturing from their parents reported significantly lower levels of stress. Of 12 to 16 year-olds from families where nurturing was used very often, only 16 per cent reported feeling high stress. Among families where nurturing behaviours were seldom used, 42 per cent of adolescents reported high stress.

STRESS AND SCHOOL

School alienation (adverse feelings toward going to school) was associated with levels of stress. Of those adolescents who stated that they disliked school, 39 per cent (8,900) reported feeling high stress. In comparison, of those who liked school very much, 20 per cent reported high stress.

FIGURE 5.12 Adolescents: Feelings about going to school: Levels of stress



Adolescents who perceived a high incidence of problem behaviours at school also reported higher levels of stress. These problem behaviours included students using drugs before and after school, drinking alcohol, vandalising (destroying) things, stealing and threatening or bullying.

TABLE 5.9 Adolescents: Perceived school problem behaviours and their incidence: Proportion who felt high stress
(Per cent)

	School problem behaviours as perceived by the adolescent				
Incidence of these behaviours	*Drug taking*	*Drinking alcohol*	*Vandalism*	*Stealing*	*Bullying*
Low	21.2	21.3	22.2	23.7	21.0
Moderate	26.7	30.8	27.5	22.9	26.3
High	36.3	39.8	31.9	32.6	31.3

Table 5.9 shows, for an increasing incidence of school problem behaviours as perceived by the adolescent, the proportion of 12 to 16 year-olds who reported feeling high stress. In general, around one in five 12 to 16 year-olds felt high stress in schools where such problem behaviours were perceived to be low. In schools where such problem behaviours were perceived to be high, the proportion of adolescents who felt high stress increased to around one in three, the exception being schools in which the incidence of alcohol drinking was high, where the proportion was 40 per cent.

FUTURE DIRECTIONS

- **Of particular benefit in helping young people avoid feelings of stress is improving their level of competency (to gain the skills needed to manage in today's world) through teaching and experience. Many of these skills are learned at home between children and caregivers and at school with peers and teachers.**

- **Programs that increase the skills of caregivers to nurture and train their children may substantially improve the health and mental health of young people. Enriched pre-natal care and preparation for parenthood, building and supporting parental competence, and widening the flexibility in parental work arrangements offer direct and efficient ways of increasing the abilities of young people to manage life's problems and challenges.**

- **The quality of care children receive outside the home also makes a critical contribution to their skill development. The setting and monitoring of standards of practice for day-care can increase skill acquisition in children and lead to enhanced function. Recognising and reducing school alienation and intervening in troubled schools can make the school setting a less stressful environment conducive to the main tasks of education.**

5.3 ADOLESCENT SUICIDAL BEHAVIOUR

The increase in the rate of suicide among Australian youth over the past two decades has focused community attention on the need to understand the types of problems and stresses which lead some young people to choose suicide as a solution to emotional distress. Suicide is now a leading cause of death among older adolescents. In 1993, it was the second most common cause of death (after motor vehicle accidents) for Australians aged 15 to 24 years.[1]

SUICIDAL THOUGHTS

BACKGROUND

Anecdotal reports from professionals working with young people and their families in clinical and educational settings suggest a recent increase in the number of adolescents who had thought about taking their own life. Prior to the WA Child Health Survey, no reliable community prevalence data on the extent of this behaviour among Australian adolescents was available. To address this need, and to establish the relationship between suicidal thoughts and other risk behaviours such as drug use and deliberate self-harm, information was sought on whether, during the six months prior to the Survey, adolescents had thought about killing themselves.

During collection of the data, care was taken to ensure that all consenting adolescents (and their parents) were aware that the Survey contained sensitive questions which they were not obliged to answer. Fewer than 1 per cent of adolescents did not answer the questions about suicidal behaviour. For those who had concerns arising from their participation in the Survey, professional assistance was made available.

INCIDENCE

TABLE 5.10 Adolescents: Suicidal thoughts (Per cent)

Suicidal thoughts	*Males*	*Females*	*All adolescents*
12 TO 14 YEAR-OLDS			
Never	88.3	85.7	87.0
Sometimes/often	10.3	12.8	11.5
Total(a)	**100.0**	**100.0**	**100.0**
number ('000)	**33.9**	**33.6**	**67.6**
15 TO 16 YEAR-OLDS			
Never	82.6	70.9	76.2
Sometimes/often	*16.7	29.1	23.5
Total(a)	**100.0**	**100.0**	**100.0**
number ('000)	**19.2**	**23.5**	**42.7**

(a) Includes not stated.

A disturbing feature of adolescent experience in Western Australia was that 16 per cent (17,900) of adolescents reported having had suicidal

thoughts. In comparison, this rate was over half the rate (27 per cent) recently reported for American adolescents by the Centre for Diseases Control from a nation-wide survey of over 11,000 high school students in the United States.[2]

The proportion of older adolescents in the WA Child Health Survey who had suicidal thoughts (24 per cent) was twice that for younger adolescents. A large part of this increased proportion in older adolescents was attributable to a significant rise in the proportion of older adolescent females (29 per cent) who had suicidal thoughts compared with younger adolescent females (13 per cent).

CAREGIVER AWARENESS

Principal caregivers reported that 3 per cent (2,900) of their adolescent children had talked about killing themselves. This contrasted markedly with the proportion of adolescents who had separately reported having suicidal thoughts (16 per cent), indicating the extent to which parents were unaware of such thoughts in their 12 to 16 year-olds.

MENTAL HEALTH PROBLEMS

TABLE 5.11 Adolescents: Suicidal thoughts: Proportion with mental health problems

	Suicidal thoughts(a)			
	Never		*Sometimes/often*	
Mental health status	*Number ('000)*	*Per cent*	*Number ('000)*	*Per cent*
Determined from the adolescent—				
No problems	76.0	83.2	*5.6	31.1
Problems	14.9	16.4	12.3	68.9
Determined from parent and teacher—				
No problems	72.7	79.6	12.1	68.0
Problems	17.0	18.6	*5.4	30.5

(a) Excludes not stated.

Child Behaviour Checklists completed by parents and teachers have been used in this publication to determine the incidence of mental health problems in adolescents. In this discussion of suicidal behaviour, checklists completed by adolescents were also used to determine their perceptions of these problems as they affected themselves and to provide a useful comparison with parent and teacher awareness of adolescent mental health problems and suicidal behaviour. More comprehensive findings from the adolescent self-reports will be published in other literature.

Among the group of 12 to 16 year-olds who had not had suicidal thoughts, the proportion with mental health problems – whether identified from adolescent self-reports or parent/teacher reports – remained essentially unchanged at less than one in five. However, within the adolescent group that reported suicidal thoughts, 69 per cent (12,300) had mental health problems as determined from adolescents themselves. When parent/teacher reports were used, less than half this proportion (30 per cent) were determined to have mental health problems.

USE OF ALCOHOL AND MARIJUANA

Heavy drinking and drug abuse are known to be major risk factors for completed suicide among youth aged 15 to 25 years.[3] For this reason, it was important to clarify the extent to which these behaviours were associated with suicidal thoughts and deliberate self harm.

Among adolescents who reported suicidal thoughts, the Survey found that the proportion who had drunk alcohol regularly (22 per cent) was twice that of those who had never had suicidal thoughts (10 per cent). For reported marijuana use, the picture was similar with 37 per cent of those adolescents who reported suicidal thoughts also using marijuana compared with 15 per cent of those who had never had suicidal thoughts.

DELIBERATE SELF-HARM

BACKGROUND

Deliberate self-harm (i.e. attempted suicide) is a major cause of hospitalisation of 15 to 19 year-old adolescents, resulting in approximately 450 hospital admissions in Western Australia each year.[4] Those admitted to hospital have an increased risk for future completed suicide and are frequently in need of assistance for a range of other health and social problems.[3]

INCIDENCE

The WA Child Health Survey asked 12 to 16 year-olds whether, in the six months prior to the Survey, they had deliberately tried to hurt or kill themselves. Eight per cent (8,300) reported

deliberate self-harm. As shown in Table 5.12, this proportion remained much the same among the sexes and between younger and older adolescents. Of the estimated 17,900 adolescents who reported having had suicidal thoughts, one-third had deliberately tried to harm or kill themselves.

TABLE 5.12 Adolescents: Deliberate self-harm (Per cent)

Deliberate self-harm	Sex		Age group (years)		All adolescents
	Males	Females	12-14	15-16	
Never	92.2	91.3	92.4	90.7	91.7
Sometimes/often	6.6	8.4	6.8	8.6	7.5

MENTAL HEALTH PROBLEMS

When the mental health status of adolescents who reported deliberately trying to harm themselves was determined from both the adolescent and parents/teachers, a similar pattern emerged to that for adolescents reporting suicidal thoughts. Almost 77 per cent of adolescents reporting deliberate self-harm had a mental health problem as determined from their self-assessment. When parent and teacher reports were used, 29 per cent were determined to have a mental health problem.

USE OF ALCOHOL AND MARIJUANA

Of those adolescents who had deliberately tried to harm or kill themselves, one in four regularly drank alcohol, twice the proportion who had never deliberately harmed themselves (11 per cent). Where 12 to 16 year-olds reported using marijuana, 41 per cent of those who had deliberately tried to harm themselves used the substance compared with 17 per cent who had not tried to harm themselves.

SUICIDAL BEHAVIOUR AND MENTAL HEALTH

Adolescents who reported suicidal behaviours (either suicidal thoughts or deliberately tried to harm or kill themselves) had a much higher proportion of self-rated mental health problems compared with mental health problem ratings from parents and teachers. This fact suggests that there is a disturbing proportion of adolescents whose parents and teachers are unaware of their risk for further suicidal behaviour and other adverse behaviours associated with mental health problems. Because these problems are not coming to the attention of adults who are in a position to assist them, the adolescents continue to suffer silently.

While suicidal behaviour in adolescents may have serious consequences in terms of subsequent self-harm or suicide, the actual risks associated with suicidal thoughts and self-harm need to be kept in perspective. The strong association between suicidal behaviour and mental health problems, together with the fact that only one-third of adolescents with suicidal thoughts have also deliberately harmed themselves, suggests that suicidal thoughts are generally more indicative of the presence of a mental health problem than they are of risk of further self-harm or suicide.

FUTURE DIRECTIONS

- **These prevalence data provide a baseline for measuring progress in the achievement of the *Goals and Targets for Australia's Health in the Year 2000 and Beyond* for reducing deaths due to suicide and the morbidity associated with suicidal behaviours among this age group.[5] They also give perspective to the clinical significance of suicidal behaviours among** Western Australian adolescents.

- **Western Australia has been at the forefront of implementing a comprehensive public health strategy to reduce the toll of suicide and self-harm among Australian youth.[6,7] There has been a systematic effort to improve the inter-sectoral and inter-agency coordination of health, education, community service, police, justice and other services dealing with "at-risk" young people and their families. Efforts have aimed at improving the early identification and referral of young people who are distressed or otherwise at increased risk and have involved improving hospital and community based treatment and support services. Efforts have also been made to reduce the access of young people to firearms and other means of suicide, and measures have been implemented to contain suicide clusters and to encourage responsible media reporting of suicide.**

- **It is apparent that parents and teachers are not identifying a significant proportion of adolescents who are "at-risk" by virtue of their self-reported suicidal behaviour and self-ratings of mental health. This suggests that public health and parenting information should be developed to assist parents, teachers and others working with adolescents to better recognise, and respond to, signs of distress and suicidal behaviour in adolescents.**

ENDNOTES

1 *Causes of Death, Australia* (ABS Catalogue No. 3303.0)

2 Centre for Diseases Control. Attempted suicide among high school students in the United States. *Morbidity and Mortality Weekly* 1991;40 (37):633-635.

3 Silburn S, Zubrick S, Hayward L. Completed suicide in Western Australian youth: A study of 96 cases aged 15 to 24 years. *Preventing Youth Suicide* (McKillop S. ed.) Canberra: Australian Institute of Criminology, 1992: 73-88.

4 Data source: Health Department of WA, Epidemiology and Health Statistics Branch, 1994.

5 Nutbeam D, et al, eds. *Goals and Targets for Australia's Health in the Year 2000 and Beyond*. Commonwealth Department of Health, Housing and Community Services. Canberra: Australian Government Publishing Service, 1993.

6 Youth Suicide Working Party. *Report to the Hon. Keith Wilson, Minister for Health*. Perth: Health Department of Western Australia, 1988.

7 Youth Suicide Advisory Committee. *Reducing Suicide and Self-harm among Young People in Western Australia: Report and recommendations to the Hon Peter Foss, Minister for Health*. Perth: Health Department of Western Australia, 1993.

5.4 FAMILY TYPE, FAMILY FUNCTION AND CHILD MENTAL HEALTH

The relationship between family type and family function is important in the context of describing child mental health. Information about family types, particularly the composition of one and two parent families, is fairly widely available from the Census of Population and Housing. While information about family type was collected in the Child Health Survey, another dimension to family life was added – family function, which describes the quality of the relationship, where one existed, between the caregiver and their spouse/partner or another non-resident adult.

This Section examines the relationship between family type, family function and the incidence of child mental health morbidity.

FAMILY TYPE

Determining family type can be a complicated process in any statistical collection. The comparability across collections of this family characteristic is, of course, dependent on questions asked to determine family type.

The Child Health Survey asked essentially equivalent questions to those in the Census of Population and Housing. Both collections sought family type information about usual residents of the household, including their relationship to an adult household member (the 'principal caregiver' in the case of the Child Health Survey) and their marital status. Family types were grouped into two parent families,

which include married couples and defacto relationships, and single parent families.

Common living arrangements reported by caregivers in the Survey included:

- two adults and child(ren) residing together (80 per cent);
- one adult and child(ren) residing together (19 per cent);
- more than two adults and child(ren) residing together (1 per cent).

The Child Health Survey did identify one aspect of relationships between adults not normally determined from family type questions – for single parent families, the Survey examined relationships existing between a parent and another non-resident adult.

FAMILY TYPE AND FAMILY FUNCTION

The principal caregiver in each family was asked to rate their relationship, where a relationship existed with a spouse/partner or another non-resident adult, as either excellent, good, fair or poor.

TABLE 5.13 Children: Family type and family function

Family type and function	*No. ('000)*	*Per cent*
Two parents—		
excellent or good relationship	221.1	73.0
fair or poor relationship	26.5	8.7
One parent—		
no relationship	34.2	11.3
excellent or good relationship with a non-resident adult	7.7	*2.6
fair or poor relationship with a non-resident adult	*5.4	*1.8
All children	**302.9**	**100.0**

When family functioning was viewed in the context of family type, over three-quarters (76 per cent) of all children surveyed were found to be living with either one or two parents whose relationship was described as excellent or good.

Just under one in nine children (11 per cent) were living with either one parent or two parents who reported being in a fair or poor relationship (31,900 children) or with a single parent in no relationship (34,200 children).

ASSOCIATION BETWEEN FAMILY TYPE AND FUNCTION, AND CHILD MENTAL HEALTH

The measure of child mental health morbidity was derived from caregiver and teacher responses to a Child Behaviour Checklist. Mental health problems were determined when the total number of behavioural and emotional problems recorded on the checklist exceeded what is commonly seen in children of the same age and sex (for more information, see Appendix A – A Guide to the Field Instruments and *Mental health morbidity* in the Glossary).

The following analysis examines the relationship between child mental health and the structure and functioning of the family.

PARENTS AND MENTAL HEALTH

Over a quarter (28 per cent or 14,100) of children from single parent families were identified as having a mental health problem, compared with 16 per cent of children from two parent families. Children from single parent families were more likely (odds ratio 2:1) to have a mental health morbidity than those in two parent families.

In view of the fact that rates of child mental health morbidity can vary according to a family's social, emotional and financial circumstances, family structure alone would not provide a satisfactory backdrop against which to assess rates of child mental health morbidity. Two additional factors that modify the initial finding were therefore considered:

- parental income; and
- the quality of the parents' relationships.

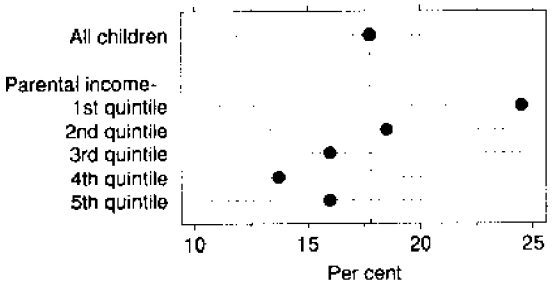
PARENTAL INCOME AND MENTAL HEALTH

Parental income comprised the income of the principal caregiver as well as income from any spouse or partner (for more detailed information, see *Parental income* in the Glossary).

As parental income fell, mental health morbidity was seen to increase. The proportion of children with mental health problems from families in the upper three quintiles of income averaged 15 per cent. In the second lowest and lowest

quintiles, the rates increased to 19 per cent and 25 per cent respectively.

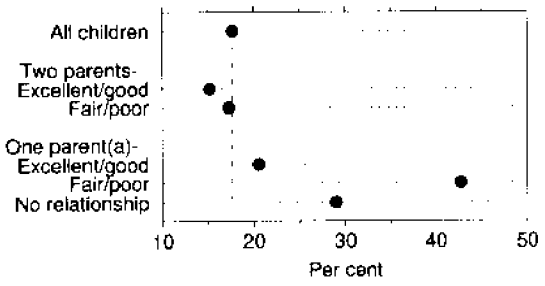
FIGURE 5.13 Children: Parental income: Proportion with mental health problems



FAMILY FUNCTION AND MENTAL HEALTH

The presence and quality of relationships among caregivers was also found to be related to child mental health.

FIGURE 5.14 Children: Family type and quality of parent relationship: Proportion with mental health problems



(a) Relationship between the single parent and another non-resident adult.

Children from families where adult relationships were described as excellent or good had a mental health morbidity rate of 15 per cent. In families where adult relationships were described as fair or poor, this rate increased to 22 per cent.

The lowest incidence of mental health problems was found in children from families where two adults were living together and who described their relationship as excellent or good (15 per cent). Children living in families with a lone caregiver sustained higher rates of mental health morbidity. The highest proportion (43 per cent) was reported by children in families where a fair or poor relationship existed between a single parent and a non-resident adult.

PARENTAL INCOME, FAMILY FUNCTION AND MENTAL HEALTH

Parental income, as defined in the Child Health Survey, was largely determined by the number of caregiver earners. Ninety per cent of children from single parent families were represented in the lowest two income quintiles.

When parental income was considered along with number of parents and the quality of parent relationships, further observations were noted about the mental health of children.

As mentioned earlier, where two caregivers reported their relationship to be excellent or good, the rate of mental health morbidity in children from these families was 15 per cent. This rate stayed fairly constant across all income quintiles, indicating that changes in income in these families had little apparent impact on the rates of mental health morbidity in the children.

INCOME, NUMBER OF PARENTS AND ADULT RELATIONSHIPS AS PROTECTIVE FACTORS

Three factors worked to protect children from higher levels of mental health morbidity:

- two parent family structures (compared with one parent families);
- higher parental incomes. Why higher income was observed to act as a protective mechanism is not fully understood and requires further study; and
- the presence of an excellent or good relationship between the adult caregiver and another adult. When adult relationships were fair or poor, rates of mental health morbidity were the highest.

5.5 MENTAL HEALTH – TREATMENT AND USE OF SERVICES

Proper treatment of children with mental health problems depends upon:

- *being able to recognise that the child has a mental health problem;*
- *being educated about the possible best avenues for treatment; and*
- *having access to mental health services appropriately resourced to specifically identify and treat the problem.*

In the main, this section examines use made of health care services by Western Australian children identified in the Survey as having a mental health problem.

MENTAL HEALTH PROBLEMS

Almost 18 per cent (53,500) of children aged 4 to 16 years were found to have a significant mental health problem (see Section 5.1 – Prevalence of Mental Health Problems for more detailed information on the incidence and nature of mental health morbidity). Principal caregivers did not always recognise that their children had a mental health problem and, when they did, treatment was not always a consideration.

When reporting on the one in six children with mental health problems, principal caregivers indicated that, during the six months prior to the Survey:

- just under one-quarter (24 per cent) of these children had emotional or behavioural problems for which they were considered to need professional help;
- over half (54 per cent) did not have any emotional or behavioural problems; and
- another 18 per cent of these children did have such problems but were not thought to need professional help.

Certain mental health syndromes were experienced more often when a child with a mental health problem was also considered to need professional help. These behavioural syndromes included delinquency, thought problems (pre-occupied with strange behaviours, ideas or obsessions), social problems, or somatic (physical) ailments. For example, 73 per cent of those children considered to need professional help had a delinquent morbidity compared with 48 per cent of those not considered to need professional help.

USE OF MENTAL HEALTH CLINICS

Child mental health clinics in Western Australia are sparsely distributed. Most are concentrated in the Perth metropolitan region.

Only 2 per cent of the 53,500 children with significant mental health problems had contact with these clinics in the six months prior to the Survey. Treatment for a mental health problem has therefore been the exception rather than the rule. With so few children having attended facilities ear-marked to specially treat such problems, meaningful analysis of this specific group was not possible.

USE OF OTHER SERVICES

The following analysis reflects the main support services that children with mental health problems used, and depicts a picture of inadequate treatment for those with these problems.

The Child Health Survey recorded the use made of all health, school and community services for each child during the six months prior to the Survey.

When a child had a mental health problem, the caregiver(s) or child were more likely (odds ratio 4:1) to have seen a teacher for a problem with the child and more likely (odds ratio 3:1) to have seen a school counsellor, in the six months preceding the Survey.

If the use of mental health clinics, Department for Community Development (DCD) offices, and contact with teachers and school counsellors constitutes "treatment", then over one-third (34

per cent) of those children with mental problems had received treatment. In comparison, 12 per cent of children without a mental health problem had received treatment.

TABLE 5.14 Mental health status: Contact with health care and other services (Per cent)

	Mental health problem	
Service type	*Yes*	*No*
Mental health clinic	*2.0	**0.4
Department for Community Development office (DCD)	**2.0	*0.6
School counsellor or guidance officer	9.4	3.7
School teacher	29.3	9.9
All visiting mental health clinics, DCD offices, school counsellors and teachers(a)	*33.6*	*12.4*
Police officer	*3.4	*0.9
General practitioner	65.4	57.4

(a) Children may have used more than one of the services listed.

Children with mental health problems were slightly more likely to have seen a general practitioner (GP) in the past six months. While the reasons for this attendance are unknown, 65 per cent of these children saw a GP compared with 57 per cent of children without mental health problems.

PROBLEMS THAT RESULT IN SERVICE USE

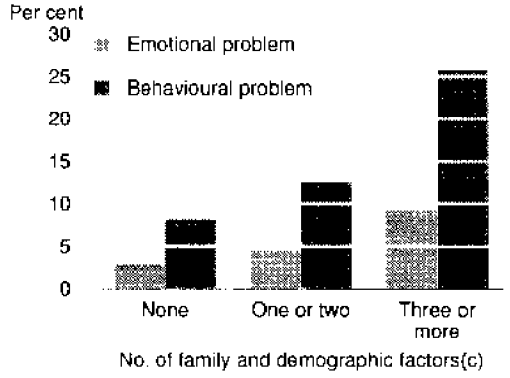
As discussed, a negligible proportion of children with mental health problems had been to a mental health clinic. Instead, they were more likely to use other, less tailored, services such as DCD services, teachers and school counsellors. Just as importantly, children who did use these services were not always the ones in most need. Children who were withdrawn, depressed and anxious (those who had emotional problems) were more likely to "silently suffer".

In contrast, children with somatic complaints, aggression, delinquency and social problems (behavioural problems) are more likely to have symptoms which would be noticed by, and disturb, others. In these cases, it is more likely that the family will be able to identify a problem, and seek treatment from these services.

REGIONAL AND FAMILY FACTORS IN THE USE OF SERVICES

Several factors increased the likelihood of seeking treatment from one of these four services.

FIGURE 5.15 Children with selected family and demographic factors: Proportion with emotional(a) and behavioural(b) mental health problems



(a) Children with a withdrawn or anxious/depressed syndrome. (b) Children with at least one somatic, aggressive, delinquent or social syndrome. (c) The factors considered were: child was from a sole parent family, the principal caregiver was depressed, the child was male, the child was an adolescent, and the principal caregiver had been treated for a mental health problem in the previous six months.

One-third of children whose principal caregiver had been treated for a mental health problem in the previous six months had received treatment themselves, compared with over one-sixth of children whose principal caregiver had not been treated. A greater proportion of children received treatment when their principal caregiver reported being depressed (19 per cent) in comparison to caregivers who were happy (11 per cent), and when the caregiver was a single caregiver (22 per cent as opposed to 15 per cent of two parent families).

FUTURE DIRECTIONS

- **The finding that a large discrepancy exists between the high prevalence of mental health problems and the number of affected children who actually receive assistance highlights two important issues:**

  Firstly, the majority of affected younger children and adolescents who receive professional assistance are presenting at non-mental health agencies (e.g. schools,

Department for Community Development offices, Juvenile Justice services, general medical practices and child health services). These agencies clearly offer important avenues for the delivery of mental health services even if they are not specifically mandated or resourced to do so.

Secondly, given such limited resources, including appropriately trained staff, it is unlikely that existing mental health out-patient clinics and other specialised mental health facilities will ever keep pace with service demand through the direct provision of treatment on a case-by-case basis.

- **The above issues highlight the need for a wiser allocation of resources through:**

  Improved targeting and coordination of mental health treatment and support services currently provided through the health, education, community services and justice sectors;

  The development of new or improved models of service delivery in the existing child and adolescent mental health services;

  Improved training and accreditation arrangements to extend the availability of mental health professionals who are suitably skilled in working with children and families;

  Inter-sectoral collaboration to develop preventive policies and programs which target whole classes of children – as opposed to being confined to interventions at the level of the individual case.

5.6 PROSPECTS FOR PREVENTION

by Sven Silburn, Stephen Zubrick and Alison Garton, Institute for Child Health Research

Mental health services for children and adolescents in Western Australia have been largely defined by the pattern of morbidity in the individuals who use them. However, setting targets for the treatment and prevention of poor mental health requires information on both those children with and those without mental health problems. The Child Health Survey provides the first such data which permits reliable estimation of the number of affected individuals, an identification of correlates of disorder and current patterns of service usage.

RECENT DEVELOPMENTS IN PREVENTION

In contrast to other areas of child and adolescent health, preventive approaches in mental health have been slow to develop. Comprehensive reviews of the available literature have recently been conducted by the National Health and Medical Research Council (1993),[1] the US Office of Substance Abuse Prevention and the American Academy of Child and Adolescent Psychiatry,[2] and US Institute of Medicine.[3] These conclude that systematic prevention approaches which aim to modify risks of disorder are efficacious. They also indicate that the community cannot afford to pay the long term costs of failing to take stronger steps to optimise the mental health and competency of the next generation of parents. Over and above the personal suffering and costs incurred by individual children and their families are the more general costs to the community. These include loss of productivity and economic efficiency, increased health care costs and the demands placed on police, juvenile justice and adult corrective systems.

AREAS IN WHICH PREVENTION OPPORTUNITIES EXIST

The Child Health Survey findings on the prevalence and correlates of mental health morbidity add to an emerging consensus within the scientific and professional community as to the conditions which foster healthy child development. They also provide important pointers to what can be done to prevent damage to children. Approaches to the prevention of mental health morbidity either centre on efforts to reduce the prevalence of specific risk factors (e.g. the number of low income families), or aim to interrupt the mechanisms by which such risk factors result in high rates of morbidity. Three critical venues for preventive action highlighted by a recent national survey of health care providers are: the family; schools; and social environments.[4]

STRENGTHENING FAMILY FUNCTIONING

Young people moving towards parenthood today face more rapidly changing circumstances and a wider range of life choices than ever before. Changes in the composition of the family, greater participation of both parents in the work-force and increased family mobility have all resulted in less opportunity for contact between children and their extended families. Fewer young people are being taught essential parenting skills by experienced members of their families. Young parents are frequently isolated from sources of social support which were available to previous generations of parents.

Successful family-based preventive programs have taken many forms. Most of these centre on early interventions that aim to support the capacity of parents to optimise their children's health and development. These include:

Improved preparation for parenting. Religious organisations and family counselling services have been extending their role in the provision of education programs about parenthood and family relationships through pre-marital counselling and parenting courses. While these programs have been shown to benefit future family functioning, they are still not widely available nor are they well attended by the couples most likely to benefit, particularly those with social disadvantage.[5]

Prenatal health care. The most fundamental point of entry for interventions that can be helpful with children in the critically formative first few years of life is early prenatal care - for both parents. This includes medical care, health and education for parenthood, and good social support. Good prenatal care dramatically lessens the likelihood of premature and low birthweight babies - both significant risk factors for subsequent mental health problems.[6,7]

Preventive health care in the first few years. Most Western Australian families have good access to regular paediatric and child health care from birth. Over and above monitoring health and development, providing immunisations, detecting nutritional problems and treating infectious diseases, such health care contact is an important avenue for parenting education and an avenue for emotional support and guidance. This is of particular importance in preparing parents to cope with unpredictably difficult episodes with their children and avoid some of the longer-term mental health consequences of child abuse.

High quality day care and pre-school education. Quality child care arrangements are critical in promoting mental health. Children who have benefited most from being placed in child care centres have been those who come from relatively disadvantaged families. Reports from several controlled studies of high quality infant day care combined with parent support and education for children from high risk families indicate substantial long term benefits.[8,9,10,11]

Children who have been in good pre-school programs have better achievement scores in primary school, are less likely to be classified as needing special education, have higher rates of school completion and tertiary education, and lower pregnancy and crime rates than comparable students who were not in such programs.

Building parental competence. Over and above being better prepared for the responsibilities of parenthood, young parents require practical information about how they can facilitate their children's mental health and development. A number of high quality programs of parent education and active skills training now exist which have been shown to be effective in promoting protective factors within the family (e.g. positive parent-child interaction, effective discipline skills and enhancement of children's social skills and other competencies).[12,13]

The effectiveness of such parent education programs is substantially increased when implemented with families at high risk for problem development. Early intervention

strategies targeting specific risk factors and a knowledge of high risk populations can be used to develop affordable prevention strategies amenable to evaluation.

Depending on the selection of risk factors, it has been shown that the unit cost to prevent a single case of long-term behavioural disorder ranged from $6,700 to $16,700 in the general population. However, once high risk cases are defined (single parent families, families receiving welfare benefits and families living in subsidised housing) these same costs can be reduced to between $1,500 to $2,900.[14] There is a need to develop local resources and the infrastructure to support the implementation and evaluation of such demonstration programs with high risk groups in Western Australia.

Improved support to families with adolescents. Compared with families with young children, families with adolescents have been neglected in the support and information available to them. Programs which aim to strengthen the capacity of families to tackle some of the predictable problems associated with adolescent development generally centre around a curricula of skills training and information to promote protective factors within the family. They also aim to facilitate parents obtaining support from other parents - sharing experience, and pooling information and coping strategies.[15] Despite the demand for such programs from parents and schools, particularly as children enter the early years of high school, their availability in Western Australia remains limited.

OPTIMISING THE PROTECTIVE FUNCTION OF SCHOOLS

Schools have a primary mandate to provide for the education of children. After the family, they are the next most important social institution concerned with the growth and development of children. Schools are increasingly being looked to as potential sites for implementing preventive action. Reasons cited for this include:

- the universality of program exposure which it is possible to achieve in schools;
- the importance of school as a critical socialising influence in the lives of children; and
- the ability of schools to assist in early detection and intervention and to link with other community organisations to help students to obtain appropriate assistance for mental health problems.

Recent research evidence demonstrates the efficacy of supporting schools to provide preventive interventions in some of the following areas.[3,16]

Life-skills education. Such education has been shown to be effective in reducing a range of adolescent risk behaviours which affect mental health outcomes.[17] These programs are most effective when implemented over a period of at least a year, when they are delivered as an integral part of the curriculum (e.g. health education, human biology or physical education), involve an experiential component and provide opportunities for practice and skill-generalisation. They have also been found to be most effective when targeting times of major transitions, such as primary to high school, high school to work, work orientation/experience or tertiary study. The content of life-skills programs usually includes developmentally appropriate information about the nature of mental health problems, advice about how to obtain help, training in social skills, healthy coping techniques, stress management and non-violent conflict resolution.[17]

Achieving healthier school environments. The importance of schooling and educational outcomes as major factors in promoting the positive mental health of all children needs to be more explicitly acknowledged in the priority accorded to the funding of education. Curriculum and organisational changes are needed to develop less stressful learning environments and opportunities for the development of a wide range of competencies. Academic curricula require frequent updating to maintain relevance to the changing work and social demands which students face on leaving school. Improved staffing levels, support to teachers, and the structure of schools all have potential to benefit both academic and mental health outcomes.

The transition from primary to high school presents important opportunities for prevention. This period of school life carries special risks for young adolescents who confront a much larger social environment and a constantly shifting array of peers, many of whom are strangers. Students whose peer networks are preserved in the transition to high school generally exhibit greater academic success, better adjustment and fewer psychological problems.[18]

Using schools as a venue for parent education in family relationships and child management skills. This is most effective when tailored to the changing information needs of parents as their child moves into the next stage of schooling e.g. from pre-school to primary and from primary to high school. School-based parent education also provides a forum for the developing social support networks and for encouraging on-going parental involvement and support to schools.

Improving the pre-vocational and in-service training of teachers could ensure that they are able to more accurately identify students with mental health problems and be aware of services which can provide help for these young people. Teacher training should place a high priority on assisting new teachers to be more aware of their influence in shaping the development of young people. It should also specifically aim to equip teachers with knowledge and applied skills in promoting competency and self-efficacy in the classroom.

BUILDING HEALTHY LOCAL COMMUNITIES

The ability of parents, schools and other child settings to successfully rear children is supported by the facilities and resources which are available within their own local community. The human and financial investment made by local government, local businesses, service clubs, church groups, youth clubs, sporting, recreational and other community organisations all contribute substantially in promoting the social cohesion and the quality of life of all members of the community. They are also critical in promoting two key protective factors for children against the development of mental health problems:

- a sense of being cared about; and
- a sense of connectedness in their lives, particularly a sense of connectedness to family and to school.[19]

Some general principles and promising trends to emerge from the recent literature on community based prevention include:

Supporting locally initiated action. What happens at the local community level is being increasingly recognised as making the greatest difference for the positive health and development of individual children. However, locally based action to build and maintain healthier communities also requires the back-up of public policies and actions at State and national levels which support the importance of child rearing activities, not only on the part of parents, caregivers and teachers, but also of friends, neighbours, employers, communities, and the economic, social and political institutions of society generally.

Developing environmental enhancement strategies. The majority of health promotion programs implemented in community settings have, until very recently, been designed to modify individuals' health habits and lifestyles, rather than to provide environmental resources and interventions that promote enhanced well-being among all residents of a particular area. Current research suggests there are substantial advantages to be gained from integrating individually focused interventions with environmental enhancement strategies.[20]

Countering harmful socio-cultural influences. Rapid socio-cultural changes and the pervasiveness of television and other mass media as major socialising influences have made the task of creating and maintaining healthy social environments for the rearing of children seem daunting and even unattainable. Some reforms in television programming are currently underway to reduce children's exposure to sensationalised or gratuitous violence. There are also efforts being made to use television constructively in portraying adolescent behaviour more realistically, presenting positive role models for young people and avoiding glamorised depictions of harmful behaviour and unhealthy lifestyles.

Nevertheless, it is important that local efforts to take constructive action are not deterred by the complexity and strength of the wide range of economic, socio-political and cultural influences which impact on today's children and families. This is supported by the "small-wins" approach to social problems, which suggests that as incremental health promotion and environmental protection efforts are adopted in local communities, they can exert a positive, though gradual influence on the quality of the broader social environment.[21]

CONCLUDING COMMENTS

In reviewing the range of preventive opportunities presently available, it is clear there is no ideal model or "quick-fix" solution that can be expected to result in major improvements in the overall mental health of children in the immediate future. However, useful principles

for prevention and promising preventive programs are now emerging from epidemiological research and from the experience of successful interventions around the world. These point to the importance of developing broad guidelines for prevention and ensuring that interventions are properly coordinated between sectors and agencies with a stake in the health, education and well-being of children and families.

With improvements in knowledge of the causes and consequences of poor mental health have come better means of deciding which models work for what purpose in fostering children's growth and development – and at what cost. Meeting the challenge of developing effective strategies of prevention will require vision and public resolve to invest responsibly in tomorrow's children – and thereby in the kind of future we will all share.

ENDNOTES

1 Raphael B. *Prevention in the Mental Health Field: Report to the Mental Health Committee.* Canberra: National Health and Medical Research Council, 1993.

2 Shaffer D, Phillips I, Enzer NB. *O.S.A.P. Prevention Monograph 2: Prevention of mental disorders, alcohol and other drug use in children and adolescents.* Rockville: US Department of Health and Human Services, 1989.

3 Committee on the Prevention of Mental Disorders, Division of Behavioural Sciences and Mental Disorders, Institute of Medicine. *Reducing Risks for Mental Disorders: Frontiers of Preventive Intervention Research.* Mrazek PJ and Hagerty RJ, eds., 1984. (ISBN 0 309 04939 3).

4 Sawyer M, Meldrum D, Tonge B, Clark J. *Mental Health and Young People: Report to the National Youth Affairs Research Scheme.* Hobart: National Clearinghouse for Youth Studies, Centre for Education, University of Tasmania, 1992. (ISBN 1 875236 11 2).

5 Harris R, et al. *Love, sex & waterskiing: The experience of pre-marriage education in Australia.* Adelaide: Centre for Human Resource Studies, University of South Australia, 1992. (ISBN 086803589).

6 Department of Health and Human Services, Health Promotion Service. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives.* Washington, DC, 1990:381-3.

7 Nutbeam D, et al, eds. *Goals and Targets for Australia's Health in the Year 2000 and Beyond.* Commonwealth Department of Health, Housing and Community Services. Canberra: Australian Government Publishing Service, 1993:68-70.

8 Weikart DP, Schweinhart LJ, Larner MB. A report on the High/Scope preschool curriculum comparison study: Consequences of three preschool curriculum models through age 15. *Early Childhood Research Quarterly* 1986;1:15-45.

9 Levenstein P. The Mother-Child Home Program: Research methodology and the real world. In: McCord J and Tremblay RE, eds. *Preventing Antisocial Behaviour: Interventions from Birth through Adolescence.* New York, NY, 1992.

10 Johnson DL. Primary prevention of behaviour problems in young children: The Huston Parent-Child Development Centre. In: Price R, Cowen RP, Lorion RP, Ramos-McKay J, eds. *Fourteen Ounces of Prevention: A Casebook for Practitioners.* Washington, DC: American Psychological Association, 1991.

11 Berrueta-Clement JR, Schweinhart LJ, Barnett WS, Epstein AS, Weikart DP. *Changed Lives: The effects of the Perry Pre-school Programs on youth through age 19.* Ypsilanti, Michigan: High/Scope Press, 1984.

12 Horacek HJ, et al. Predicting school failure and assessing early intervention with high risk children. *Journal of the American Academy of Child and Adolescent Psychiatry* 1987;26:758-763.

13 Hamburg DA. *The Family Crucible and Child Health Development.* New York: The Carnegie Corporation of New York, 1992.

14 Boyle MH, Offord DR. Primary prevention of conduct disorder: Issues and prospects. *Journal of the American Academy of Child and Adolescent Psychiatry* 1989;29 (2): 227-233.

15 Small SA. *Preventive Programs that Support Families with Adolescents.* Working Paper of the Carnegie Council on Adolescent Development, Carnegie Corporation of New York, New York, 1990.

16 National Commission on the Role of the School and the Community in improving Adolescent Health. Joint policy report from the U.S. National Association of State Boards of Education and the American Medical Association. Washington, DC, 1990.

17 Hamburg BA. *Life Skills Training: Preventive interventions for young adolescents. Report of the Life Skills Training Working Group.* New York: The Carnegie Corporation of New York, 1990.

18 Price RH, Ciocci M, Penner W, Trautlein B. *School and Community Support Programs that Enhance Adolescent Health and Education.* Working Paper of the Carnegie Council on Adolescent Development, Carnegie Corporation of New York, New York, 1990.

19 Resnick MD, Harris LJ, Blum RW. The impact of caring and connectedness on adolescent health and well-being. *Journal of Paediatrics and Child Health* 1993; 29. Suppl. 1:s3-s9.

20 Stokols D. Establishing and maintaining health environments: Towards a social ecology of health promotion. *American Psychologist* 1992;47:1, 6-22.

21 Weick KE. Small wins: Redefining the scale of social problems. *American Psychologist* 1984;39:40-49.

APPENDIX A – A GUIDE TO THE FIELD INSTRUMENTS

THE SURVEY PROCESS

The survey process was undertaken in collaboration with the Australian Bureau of Statistics (ABS) who assisted the Institute for Child Health Research in drawing the random samples, designing the instruments and providing access to trained interviewers. The entire survey process was under the aegis of the Institute.

Participation in the Survey was voluntary and houses were randomly selected for approach. Trained interviewers visited selected houses to obtain the consent of the household to participate in the Survey. Once consent was obtained, the interviewer made an appointment to conduct the interview, usually with the principal caregiver (most often the mother of the child). If, after five attempts, the household could not be contacted, the house was listed as a non-response.

SURVEY INSTRUMENTS USED

SURVEYOR ADMINISTERED

Four forms were administered by the surveyor during the household face-to-face interviews (average interview time was 88 minutes).

Household Record Form (HRF93). This recorded details of the house, family members, and basic demographics. Homes were visited up to five times, on weekends and evenings to attempt to make contact with the residents. The HRF was collected for all dwellings the interviewer approached.

Sources used for data items: ABS Census of Population and Housing, 1986 and 1991; Australian Institute of Family Studies (Australian Living Standards Study).

Family Background Questionnaire (FAMA93 and FAMB93). Administered to the principal caregiver, these 11-item and 32-item instruments collected standard ABS demographic information about the adult caregivers, their ethnicity, migratory status, literacy, occupation, employment, income, education, and housing.

Source used for data items: Census, 1986 and 1991.

The Child Health Questionnaire (CHQ93). Administered to the principal caregiver, it covered all children in the family aged 4 to 16 years. This 130-item survey instrument recorded details of each child's birth, developmental milestones and medical history, significant separations from the family, sensory and cognitive functioning, significant childhood injury (head injuries, burns, poisonings and fractures), specific health problems, functional impairments, health care utilisation, behavioural and emotional functioning, education and school information.

Sources used for data items: Ontario Child Health Study; Australian Institute of Family Studies (Australian Living Standards Study); ABS National Health Survey; ABS Child Care Arrangements Survey; Youth Risk Behaviour Survey of the Centre for Diseases Control (Atlanta, USA).

FAMILY SELF-COMPLETION

The following forms were left by the interviewer for the family to complete.

Family Health and Activity Questionnaire (FAMH93). Self-administered by the principal caregiver, this 27-item instrument requested details on parental health, marital and family relationships, emotional supports, life-stress events, neighbourhood environment and contact, parental self-efficacy, child rearing and disciplinary styles.

Sources used for data items: Census, 1991; Australian Institute of Family Studies (Australian Living Standards Study); Ontario Child Health Study.

Child Behaviour Checklist (CBCL93). Administered to the principal caregiver, this 112-item instrument, when combined with the Teacher Report, formed the main instrument to estimate mental health morbidity among children. The main categories of morbidity to be estimated were: delinquent behaviour, aggressive behaviour, withdrawn, anxious/depressed,

somatic complaints, social problems, thought problems, and attention problems.

Source used for data items: Child Behaviour Checklist (Achenbach, 1991 - used with permission).

Youth Self Report (YSR93-J and YSR93-S). Completed by young people aged 12 to 16 years, Part A contained the 112-item Child Behaviour Checklist Youth Self Report and recorded emotional and behavioural problems. Part B contained an additional 72 items to record emotional supports, juvenile justice involvement, health and risk behaviours, AIDS knowledge, self-esteem indexes, perceived self-efficacy, coping styles, competencies, and perceptions of parenting style.

Sources used for data items: Adolescent Health Survey 1992 (Centre for Adolescent Health, Victoria); Ontario Child Health Study; Child Behaviour Checklist Youth Self Report (Achenbach, 1991 – used with permission).

SCHOOL FOLLOW-UP

A school follow-up was then conducted. Forms were sent to either the primary or high school for each child in the Survey.

Primary School Forms (PS93-PR, PS93-CT). Given to the principal and the primary school teacher to complete, they detailed the child's academic, behavioural, and physical and mental health as the school saw it.

Sources used for data items: British Abilities Scales Vocabulary and Matrices (used with permission NFER-Nelson Publishing Co. Ltd & Australian Council for Educational Research); Child Behaviour Checklist – Teacher Report Form (Achenbach, 1991 – used with permission), questions tailored to measure attendance, scholastic and social competencies, vocational readiness, school culture and environment.

High School Forms (HS93-SD, HS93-PR, HS93-ST and HS93-ET). High schools were more complicated and additional forms were used to increase the chance of obtaining some information on all high school children in the study. Similar information was gathered to that in the primary school with allowances for age.

Sources used for data items: British Abilities Scales Vocabulary and Matrices (used with permission NFER-Nelson Publishing Co. Ltd & Australian Council for Educational Research); Child Behaviour Checklist -Teacher Report Form (Achenbach, 1991 – used with permission), questions tailored to measure attendance, scholastic and social competencies, vocational readiness, school culture and environment.

APPENDIX B – TECHNICAL NOTES

RELIABILITY OF ESTIMATES

As estimates from the Child Health Survey are based on information obtained from the occupants of a sample of dwellings, they are subject to sampling variability; that is, they may differ from the figures that would have been produced if all in-scope dwellings had been included in the enumeration. This variability, known as the *sampling error*, can be estimated from the sample data. One measure of this sampling error is given by the *standard error*, which indicates the degree to which an estimate may vary from the value that would have been obtained from a full enumeration (the 'true' population figure). There are about two chances in three that a sample estimate differs from the true population value by less than one standard error, and about nineteen chances in twenty that the difference will be less than two standard errors.

Alternatively, sampling variability can be presented by the *relative standard error*, which is obtained by expressing the standard error as a percentage of the estimate to which it refers.

Some of the standard errors associated with the estimates in this publication are relatively high. In general, the smaller the estimate and the smaller the sub-population on which it is based, the higher the relative standard error. In this publication those estimates with associated relative standard errors higher than 25 per cent but less than 50 per cent are marked with a single asterisk (*). Where the relative standard error is 50 per cent or more, the corresponding estimate is marked with a double asterisk (**). The usefulness of estimates with such high relative standard errors is limited. It is left to the user to exercise the necessary caution in using the estimates in this publication.

Standard errors for all estimates in this publication were derived using the ultimate cluster variance estimation technique, where the sampling error is estimated from the variability between estimates for each of the primary sampling units (which were census collection districts). Because of the large number of estimates in this publication, standard errors for each estimate are not shown. The ABS will, on request, provide details of the standard errors for each of the estimates published.

OTHER SOURCES OF ERROR

The imprecision due to sampling variability, which is measured by the standard error, is not the only type of inaccuracy to which the estimates are subject. Other sources of inaccuracies, known collectively as *non-sampling error*, may occur because of form design limitations, imperfections in reporting by respondents due to difficulties recalling certain data or lack of appropriate records for certain data, errors made in collection such as in recording and coding data by the interviewers, and errors in the processing of the data. Non-sampling error may occur in any enumeration, whether it be a full count or a sample. Every effort is made to reduce non-sampling error to a minimum by careful design and testing of questionnaires, thorough training for interviewers, efficient operating procedures including quality control procedures, and use of appropriate methodologies.

APPENDIX C – SAMPLE DESIGN

INTRODUCTION

The Western Australian Child Health Survey was based on the Ontario Child Health Study which was conducted in early 1983 under the auspices of Statistics Canada. The sample design used in Western Australia has a number of similarities to that used for the Ontario study.

The main estimates of interest are the prevalence of certain emotional and behavioural disorders. The design goal for the survey was to achieve a 95 per cent chance of the final estimates being within 4 per cent of the true population values within each region.

POPULATION

The Survey population was all children living in Western Australia aged 4 to 16 years inclusive. Because no complete list of Western Australian children exists, area sampling was employed. The survey framework was the set of geographic divisions of the State made for the 1991 Census of Population and Housing, and counts of children on Census night were used in constructing the sample. Because the Child Health Survey went into the field two years after the Census, data taken from the Census for this survey was in respect of children aged 2 to 14 years inclusive on Census night.

The final dwelling selection was conducted by field interviewers who asked screening questions to determine if each household visited was in scope. A dwelling was considered in scope if there was at least one child aged 4 to 16 years living there.

Aboriginal children living in country areas were excluded from the Survey. This was due mainly to difficulties associated with establishing a framework from which to select a representative sample, and to the logistics of collecting data from sometimes widespread and isolated communities. The Institute for Child Health Research (ICHR) is undertaking exploratory discussions with a view to conducting a child health survey of Western Australian Aboriginal children.

STRATIFICATION

The Survey was designed to produce separate figures within each of six regions of Western Australia (See *Survey regions* in the Glossary and Appendix D – Western Australia: Survey Regions). These regions comprise Health Department of Western Australia administrative regions, and their boundaries have a rough correspondence to ABS Statistical Divisions or Subdivisions. Six regions were specified: three within the Perth Statistical Division, and three country regions that are each comprised of several Statistical Divisions.

To produce regional figures, the Survey population was stratified into these six regions. The division of the Perth Statistical Division into three survey regions was made on the basis of Statistical Local Areas (SLAs) and postcodes. SLA boundaries were chosen in all cases except for two SLAs: Stirling Central, and Canning – where the division was on the basis of postcode boundaries.

SAMPLE SIZE

To achieve a 4 per cent confidence interval at the 95 per cent level on an estimate of proportion of 15 per cent within a region, a sample size of 560 was required in each region. This assumed a response rate of 70 per cent, and a design effect of 1.23. The 1992 pilot test confirmed the original estimate of response rate at 70 per cent.

A sample size of 540 to 570 children was selected in each region except for the Far North WA region where, owing to the small population size and sparse areas of settlement, a reduced sample size of 440 children was selected.

RESPONSE RATES AND DESIGN EFFECTS ACHIEVED

Non-response could arise from a refusal to participate in the Survey, or from an inability to contact selected households. If no-one was at home on the initial visit to a household, the

interviewer made up to five visits over several days and at different times of the day in an effort to make contact. If no contact resulted, the selection was marked as a non-contact. Overall 1,462 households participated in the Survey, providing data on 2,736 children. Non-responding households comprised 325 refusals or exemptions (because of illness or recent bereavement) and 517 households which could not be contacted after five visits. It is not known how many of these 517 households would have been in scope of the Survey.

A household was counted as a participant in the Survey if a response was obtained to the main Survey instrument, the child health questionnaire. Responses to secondary instruments were obtained as follows:

Survey instrument	*Response rate(a)*
	(Per cent)
Parent Child Behaviour Checklist	95.0
Youth self-report	91.0
Teacher report	86.0

(a) Based on eligible sub-populations.

Separate design effects were calculated for each variable collected in the Survey. Estimated design effects ranged from 1.21 to 1.84 for measures of childhood disorder, from 1.38 to 1.86 for use of alcohol, marijuana, or smoking, and from 1.58 to 2.03 for use of ambulatory medical care and mental health and school services.

STAGES OF SELECTION

In each of the three Perth metropolitan regions there were three stages of selection:

- Selection of Census Collection Districts (CDs);
- Selection of in-scope dwellings within each selected CD;
- Selection of children within each selected dwelling.

The first stage was selected with probability proportional to the number of dwellings containing eligible children within each CD. A fixed sample size was taken within each selected CD, at the second stage. A 'skip' interval through each selected CD was calculated, taking into account the number of dwellings in the CD, and the proportion of in-scope dwellings in the CD. The skip interval was calculated to produce the required number of in-scope dwellings in the CD, using the entire CD.

From a random start point the interviewer moved around the CD, stopping at every dwelling indicated by the skip interval. When an out-of-scope dwelling was encountered, the interviewer simply moved on to the next dwelling as specified by the skip interval. The interviewer stopped as soon as the required number of in-scope dwellings in the CD had been found.

At the final stage, every eligible child within an in-scope dwelling was selected. Except for non-response, the overall result of this scheme was a self-weighting sample design within each region. That is, within a region each child had the same probability of selection.

In the three country regions, a four stage sampling plan was followed:

- Selection of Statistical Local Areas (SLAs);
- Selection of CDs;
- Selection of in-scope dwellings within each selected CD;
- Selection of children within each selected dwelling.

The large size and sparse population density of the country regions necessitated the introduction of the extra stage of selection. Country regions can prove very costly to enumerate and the extra stage of clustering prevented the selected sample being uniformly spread across the entire State.

SLAs are not always uniform in size. Very small SLAs, where the required sample size could not be obtained in a random way, were combined prior to performing the selection. Each SLA was selected with probability proportional to the number of in-scope dwellings. The other stages of selection were conducted as per the Perth metropolitan region case.

CLUSTER SIZES

The table below shows the average number of in-scope children living in each in-scope dwelling, by survey region.

In each Perth metropolitan region, 32 CDs were selected. Within each CD, ten eligible dwellings

were chosen, yielding a sample size of approximately 560 children in each region.

Average number of children aged 2 to 14 years in dwellings containing one or more children aged 2 to 14 years, 1991 Census

Survey region	*Average no. of children*
North metro	1.76
East metro	1.76
South metro	1.76
Southern	1.90
Central	1.80
Far North	2.00

In the Southern WA and Central WA regions, five SLAs were selected and then five CDs were selected within each of these SLAs. Then 12 in-scope dwellings were selected in each selected CD. This yielded a sample size of 540 to 570 in-scope children in each region.

In the Far North WA region, because of the small population and the sparse nature of settlement, only three SLAs were selected and six CDs selected from within each of these SLAs. Twelve in-scope dwellings were selected in each CD, yielding a sample size of around 440 in-scope children. As a result of the smaller sample size in this region, the size of the 95 per cent confidence interval was expected to rise from 4 per cent to 4.6 per cent on an estimate of proportion of 15 per cent.

TREATMENT OF NON-PRIVATE DWELLINGS

On Census night 1991, there were 7,230 eligible children living in non-private dwellings (NPDs) in Western Australia.

As the Survey was essentially family based, children in some types of NPDs were identified by the chance of selection of the private dwelling of their principal caregiver. These NPDs included boarding schools and residential colleges.

All other classes of NPDs were regarded as falling outside the scope of the Survey. The number of children falling into these classes was very small (overall there were approximately 325,000 in-scope children in Western Australia), and could be overlooked without significantly affecting the Survey results. Based on the overall sampling fraction planned for the Survey, only a handful of children from NPDs would be selected even if they were included in the Survey.

The following table gives the number of eligible children in each recorded type of NPD.

Children aged 2 to 14 years living in non-private dwellings on Census night, 1991.

Type of non-private dwelling	*No. of children*
Hotels, motels	642
Staff quarters	191
Boarding houses, private hotels	182
Boarding schools	2 755
Residential colleges	1 161
Hospitals	231
Hostels for the disabled	126
Nursing homes, homes for the aged	129
Hostels/shelters for the homeless	86
Childcare, other welfare institutions	65
Corrective institutions	134
Other non-private dwellings	1 019
Unstated non-private dwellings	509
Total	**7 230**

EXCLUSION OF NON-METROPOLITAN ABORIGINALS

As stated earlier, Aboriginal children in country areas were excluded from the Survey because of likely collection difficulties. This was achieved by asking screening questions of each dwelling visited by the interviewers to determine whether the household was in scope of the Survey. To aid in this exclusion, CDs where the population was composed of 80 per cent or more of Aboriginals were not given a chance of selection. Overall, 43 CDs were excluded from country regions on these grounds, including 7,755 Aboriginal people and 440 non-Aboriginals.

EXCLUSION OF MONTHLY POPULATION SURVEY CDs FROM THE SAMPLE

Any CDs which had been selected for the ABS Monthly Population Survey (MPS) were excluded from the Survey. In Western Australia, the MPS takes 20 per cent of the CDs. The MPS tends to take the larger CDs so that, overall, 25 per cent of the Western Australian population is unavailable for selection in client surveys.

The MPS is constructed as a representative sample, and one could view the remainder of the CDs left over after the MPS selection also as a random sample of the State population. Thus, the exclusion of the MPS CDs could be viewed as the first stage of the sample selection.

TREATMENT OF NON-RESPONSE

In the Western Australian Child Health Survey, a 70 per cent response rate was set as the target. The sample size was chosen to allow for this amount of non-response. In estimation and analysis, non-response was accounted for by treating the non-respondents as not in the sample. That is, the effective sample size used in any analysis was the number of respondents rather than the number of selections. For estimates of population totals, this is essentially equivalent to imputing the average value of the respondents for each non-respondent.

This treatment of non-response can lead to bias in the analysis if the non-respondents display different characteristics to the respondents. In general it is not possible to measure this possibility exactly, although it is often possible to gauge the likelihood of this occurrence through secondary variables. For instance, if a particular demographic or socio-economic group displays a different response rate to the overall sample, the possibility for bias exists.

To test for the possibility of differential non-response, the distribution of the Survey sample was compared with data from the 1991 Census for a range of demographic variables. This analysis turned up two anomalies – lower than anticipated response for older children, particularly 16 year-olds, and lower than anticipated response from families with one or two children, particularly among families with older children. While the reasons for this remain unclear, it is believed that the two phenomena are related.

To allow for these non-response effects, a post-stratification weighting system was employed. The Survey sample was stratified by region and, within each region, the sample was post-stratified by child's age and number of children in the family. Population benchmarks were obtained from the 1991 Census, and were adjusted to allow for population growth between the Census and the Survey date. Separate weights were determined for each of the supplementary questionnaires, based on the appropriate sub-population and response rate.

ESTIMATION

The post-stratification weights were used to produce estimates of population totals and proportions, and for all analyses described in this publication.

To estimate the number of children with a particular characteristic, the following formula was used:

$$\hat{X} = \sum_{r=1}^{R} \sum_{a=1}^{A} \sum_{f=1}^{F} \frac{N_{raf}}{n_{raf}} \sum_{i=1}^{n_{raf}} x_{rafi}$$

where:

$\hat{X}$ is the estimated number of children with the characteristic of interest

r denotes regions (1, .., R =6)

a denotes age categories (1, .., A=4)

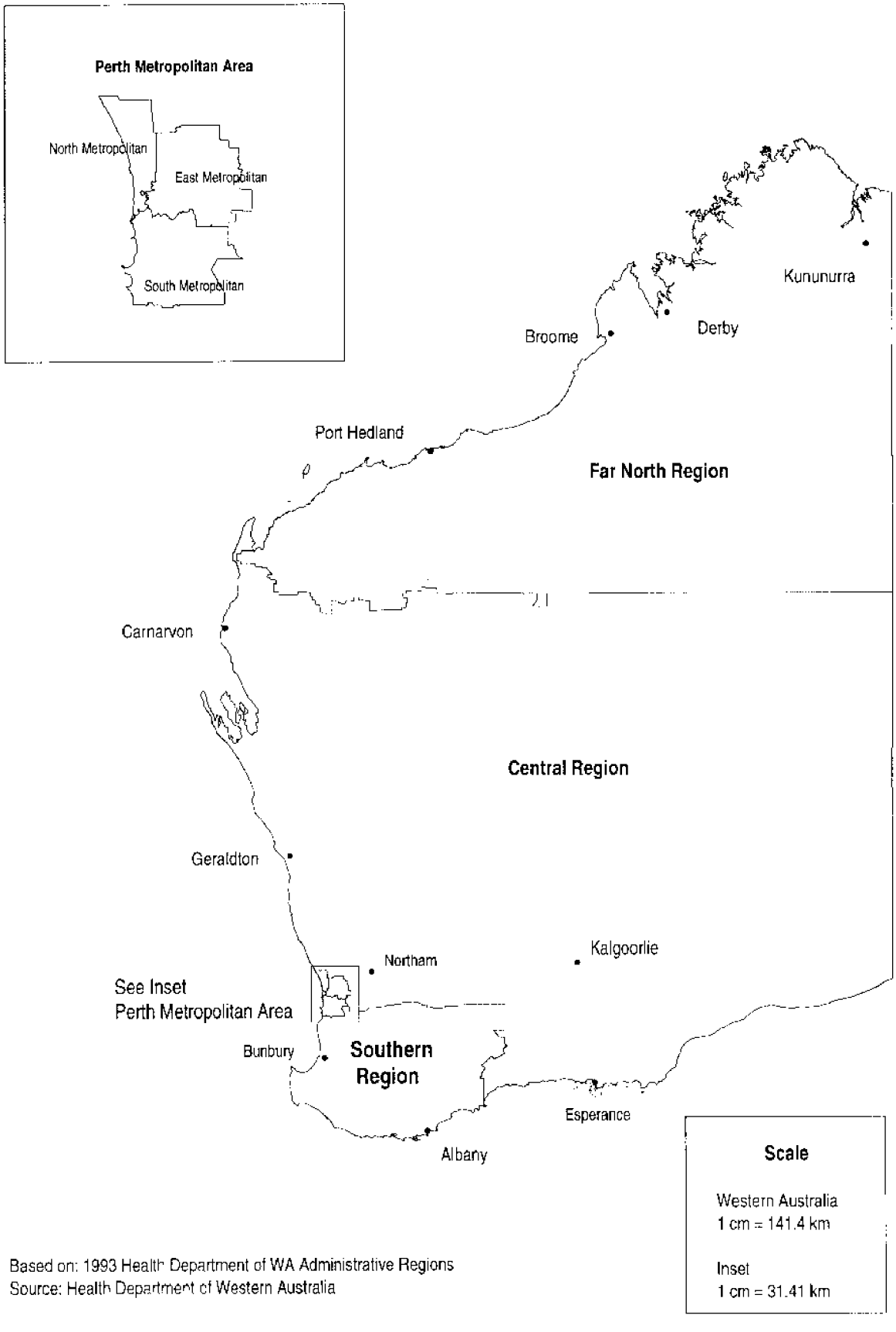
f denotes family size categories(1, .., F=4)

N_{raf} is the population benchmark for region r, age group a, family size group f

n_{raf} is the number of respondents in region r, age group a, family size f

$x_{rafi} = 1$ if respondent i has the characteristic of interest; 0 otherwise.

APPENDIX D – WESTERN AUSTRALIA: SURVEY REGIONS



Based on: 1993 Health Department of WA Administrative Regions
Source: Health Department of Western Australia

GLOSSARY

ALCOHOL CONSUMPTION

Adolescents were asked about their consumption of alcohol beyond the small amount allowed by their parents; no attempt was made to quantify a 'small amount'. Consumption of alcohol included drinking beer, wine (including coolers) or spirits, but excluded sips or tastes.

ANOREXIA

Anorexia (*anorexia nervosa*) is a severe disturbance in eating behaviour characterised by a refusal to maintain a minimally normal body weight. This is accompanied by a disturbance in perception of body weight and shape.

BEHAVIOURAL SYNDROMES

Child Behaviour Checklists (CBCLs) completed by caregivers and teachers were used to determine whether or not a child had a mental health problem (see *Mental health morbidity* below). A mental health morbidity was defined where the CBCL Total T Score was equal to or greater than 60 on either the parent or teacher checklist. Individual syndrome scales on the parent or teacher checklists were judged to be abnormal where they equalled or exceeded 67 in the presence of an abnormal Total T Score. Eight specific child mental health problems (behavioural syndromes) were thus defined: delinquent; thought; attention; and social problems; somatic complaints; aggressive behaviour; anxiety/depression; and withdrawn behaviour.

BLENDED FAMILY

A blended family is one where there are two or more children, of whom at least one is the natural child of both of the parents (or the parent in a one parent family), and at least one is the step child of one of the parent(s).

BODY MASS INDEX

See *Relative weight*.

BULIMIA

Bulimia (*bulimia nervosa*) is a severe disturbance in eating behaviour characterised by binge eating followed by inappropriate compensatory behaviours such as self-induced vomiting; misuse of laxatives, diuretics or other medications; fasting; or excessive exercise. This is accompanied by a disturbance in perception of body weight and shape.

COMPETENCY

Adolescents were asked to complete a 22-item questionnaire designed to measure their ability to manage common situations in daily life such as meeting people for the first time, doing tasks under pressure, requesting help, or making important decisions.[1] They responded in terms of how sure they would feel about managing these situations using a five point scale ranging from "Not at all sure" to "Very sure". These responses were scored and divided into quartiles expressed as low, some, quite a bit and high degrees of certainty about their competency in these situations.

DISABILITY

A disability, as defined by the *Western Australian Disability Services Act*, is: attributable to an intellectual, psychiatric, cognitive, neurological, sensory or physical impairment or a combination of impairments; permanent or likely to be so; chronic or episodic in nature; and resulting in a reduced capacity of the individual for communication, social interaction, learning, mobility and a need for continuing support services.

Survey questions were structured to capture the essential elements of this definition. For the purposes of the Western Australian Child Health Survey, a disability was defined as the presence of one or more of the following functional limitations: needing any help with transport due to an illness, injury or medical condition; needing help or supervision in getting around the neighbourhood, for reasons other than age; unable to walk without assistance

from someone; needing physical help with eating, dressing, bathing or going to the toilet, for reasons other than age; and, any limitation in the kind or amount of ordinary play or activity the child could do with other children.

DSM-III-R CLINICAL DIAGNOSES

Clinical diagnoses based on The Diagnostic and Statistical Manual of Mental Disorders issued by the American Psychiatric Association.[2] This manual details criteria for psychiatric diagnoses. Since the Survey, DSM-IV has been published.

FAT AND REFINED SUGAR CONSUMPTION

Adolescents were asked if, during the day prior to the survey, they had eaten a meat pie, hamburger, hot dog or sausage; potato chips or crisps; or biscuits, doughnuts, chocolate bar, ice cream, pie or cake. Those adolescents who answered 'yes' were asked to indicate whether they had consumed such foods 'once only' or 'twice or more'. Adolescents with high consumption of foods from these groups were identified by deriving a composite score based on the number of times these food groups had been consumed. Those with a score greater than one and a half standard deviations above the mean score were considered to have a high intake of these foods.

FRUIT, COOKED VEGETABLES AND GREEN SALAD CONSUMPTION

Adolescents were asked if, during the day prior to the survey, they had eaten fruit, cooked vegetables or green salad. Those adolescents who answered 'yes' were asked to indicate whether they had consumed such foods 'once only' or 'twice or more'. Adolescents with low consumption of foods from these groups were identified by deriving a composite score based on the number of times these food groups had been consumed. Those with a score greater than one standard deviation below the mean score were considered to have a low intake of these foods.

INCOME QUINTILES

To assist in the analysis and presentation of income data, parental incomes were ranked into five equal groups called quintiles, each quintile representing 20 per cent of the income distribution across families.

MENTAL HEALTH MORBIDITY

See also *Behavioural syndromes.*

Caregivers, teachers and adolescents each completed a Child Behaviour Checklist (CBCL) designed to identify child behavioural and emotional problems.[3] Responses from both caregivers and teachers were used to determine whether or not a child had a mental health problem (morbidity). A mental health morbidity was defined where the CBCL Total T Score (see *T Score* below) was equal to or greater than 60 on either the parent or teacher checklist. Combining information from parents and teachers was done in line with recommendations by Bird et al.[4]

ODDS RATIO

The odds of a given event is the ratio of the probability of its occurrence to the probability of its non-occurrence. The odds ratios used in this publication are a measure of relative risk, derived from a formula which examines the association between, in most of the Child Health Survey cases, a risk factor (exposure), and an adverse health outcome.

PARENTAL EXPECTATIONS

Adolescents were asked the question "How much do your parents expect of you?". Responses were reported on a seven point scale ranging from "No expectations" to "High expectations". Because only 5 per cent of adolescent responses occurred in the first three (lowest) levels of expectation, these responses were grouped and described as "Low". The fourth, fifth/sixth and seventh (highest) levels of expectation were described as "Moderate", "Fairly high" and "High" respectively.

PARENTAL INCOME

Parental income was calculated by adding the individual gross incomes (incomes before deduction of tax, superannuation payments and health insurance payments) of the principal caregiver and any spouse or partner. People were not asked to state their exact income, only to indicate the range into which their income fell. Gross income included wages, salaries, overtime, family allowance and other benefits, child support, superannuation, interest received, dividends and business income.

PARENTAL NURTURING STYLE

Adolescents were asked to complete a 15-item questionnaire designed to establish the pattern of parenting behaviour used towards them.[5] Behaviours which reflected a nurturing style included praising, appreciating, showing pride and smiling. The frequency with which parents engaged in these behaviours in the six months prior to the Survey was reported on a four point scale ranging from "Never" to "Very often". Responses were scored and divided into quartiles representing the following frequencies with which a parental nurturing style was used: seldom, sometimes, often and very often.

POPULATION PROJECTIONS

Population projections are based on a combination of assumptions. The factors upon which the assumptions are based are:

- Mortality;
- Fertility;
- Overseas migration; and
- Interstate migration.

The ABS produces eight series of population projections. Each series makes different assumptions about one or more of these factors. The mortality rate is assumed to be the same across all series.

While Series A, B, C and D are published, Series E, F, G and H are not published but are available on request. Series A, the only series used in this publication, assumes medium level fertility, low net overseas migration and high net interstate migration. For further information, refer to the publication *Projections of the Populations of Australia, States and Territories, 1993 to 2041* (ABS Catalogue No. 3222.0).

PRINCIPAL CAREGIVER

For each household, a principal caregiver was nominated to provide information about the selected child(ren). This was the person who was considered to spend the most time with the child(ren). In most cases, the principal caregiver was the child(ren)'s mother.

RELATIVE WEIGHT

Adolescents were asked to report their height and weight. From this information, a Body Mass Index (BMI) was derived using the formula – weight (kg) divided by the square of height (m^2). The BMI was used to categorise adolescents into five groups as recommended in the 1994 World Health Organisation report on physical status.[6] The groups are:

	Body mass percentiles
Obese	Greater than the 95th percentile
At risk of overweight	85th to 95th
Acceptable weight	15th to 85th
At risk of underweight	5th to 15th
Very underweight	Less than the 5th percentile

SENSORY AND MOTOR FUNCTION PROBLEMS

A child was classified as having a sensory or motor function problem if they: did not have normal vision in both eyes; did not have normal hearing in both ears; had speech which other people needed help to understand; used a wheelchair, artificial limb or brace, crutches, cane, or walking frame to get around; or had any physical pain or discomfort.

SPECIFIC HEALTH PROBLEMS

For each child aged 4 to 16 years, principal caregivers were asked whether, at the time of the Survey, the child suffered from a range of specific health problems. Only a limited number of these problems were identified with sufficient cases to allow meaningful analysis.

The full range of health problems asked about were: asthma; hay fever or some other allergy; heart problem; epilepsy or convulsions without fever; kidney disease; arthritis or rheumatism; cerebral palsy; diabetes; cancer; migraine or severe headache; mental retardation; muscular dystrophy or other muscle disease; developmental delay or lag; cystic fibrosis; missing fingers, hands, arms, toes, feet or legs; any stiffness or deformity of the foot, leg, fingers, arms or back; paralysis or muscle weakness of any kind; spina bifida; any difficulty with coordination or clumsiness; any blood disorder; a condition present since birth such as club foot or cleft palate.

STRESS

Adolescents were asked whether they had felt under any strain, stress or pressure during the six months prior to the Survey. The categories which adolescents used to report stress levels, as

well as the terms used to describe those categories in this publication are:

Stress level categories used in instruments	*Stress level categories used in this publication*	
Almost more than I can take	Extreme	High
Quite a bit of pressure	Quite a bit	High
Some/more than usual	Some	More than usual
A little/about usual	A little	Low
Not at all	None	Low

SURVEY REGIONS

Survey regions are the smallest geographic areas of Western Australia for which Survey results are available. The regions are based on the 1993 Health Service Management Regions used for administrative purposes by the Health Department of Western Australia.

There are six survey regions: three within the Perth metropolitan area, and three country regions (see Appendix D – Western Australia: Survey Regions).

The Perth metropolitan area coincides with the Perth Statistical Division, and comprises North metropolitan, East metropolitan and South metropolitan regions, the division being on the basis of Statistical Local Areas (SLAs) and postcodes. SLA boundaries were used in all cases except for two SLAs: Stirling Central, and Canning – where the division was on the basis of postcode boundaries.

The Western Australian country regions are: the Southern region (comprising the South-West, Lower Great Southern and Upper Great Southern Statistical Divisions); Central region (Central, Midlands and South-Eastern Statistical Divisions); and Far North region (Pilbara and Kimberley Statistical Divisions).

T SCORE

The number of Child Behaviour Checklist problems reported for each child was converted to a normalised T Score i.e. a score based on a normal distribution with a mean of 50 and a standard deviation of 10. T Scores provide a convenient metric that is similar for all scales. They also permit judgements to be made as to whether a child has relatively few or many problems in comparison with the general population of children of the same age and gender.

ENDNOTES

1 Cowen EL, Work WC, Hightower AD, Wyman PA, Parker GA, Lotyczewski BS. Toward the development of a measure of perceived self-efficacy in children. *Journal of Clinical Psychiatry* 1991;20(2):169-178.

2 American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Health Disorders, Version Three, Revised*. Washington, DC, 1987.

3 Achenbach TM. *Manual for the Youth Self Report and 1991 Profile*. Burlington, VT: University of Vermont Department of Psychiatry, 1991.

4 Bird HR, Gould MS, Rubio-Stipec M, Staghezza BM, Canino G. Screening for childhood psychopathology in the community using the Child Behaviour Checklist. *Journal of the American Academy of Child and Adolescent Psychiatry* 1990;30(1):116-123.

5 Lempers JD, Clark-Lempers D, Simons RL. Economic hardship, parenting and distress in adolescence. *Child Development* 1989;60:25-39.

6 World Health Organisation. *Report of the WHO Expert Committee on Physical Status: Use and Interpretation of Anthropometry*. Geneva: WHO, 1994.

Australian Bureau of Statistics

For more information ...

The ABS publishes a wide range of statistics and other information on Australia's economic and social conditions. Details of what is available in various publications and other products can be found in the *ABS Catalogue of Publications and Products* available at all ABS Offices (see below for contact details).

Information Consultancy Service

Information tailored to special needs of clients can be obtained from the Information Consultancy Service available at ABS Offices (see Information Inquiries below for contact details).

National *Dial-a-Statistic* Line

0055 86 400

(Steadycom P/L: premium rate 25c/21.4 secs.)

This number gives 24-hour access, 365 days a year, for a range of statistics.

Electronic Data Services

A large range of data is available via on-line services, diskette, magnetic tape, tape cartridge and CD ROM. For more details about these electronic data services, contact any ABS Office (see below).

Bookshops and Subscriptions

There is a large number of ABS publications available from ABS bookshops (see below Bookshop Sales for contact details). The ABS also provides a subscription service through which nominated publications are supplied by mail on a regular basis (telephone Subscription Service toll free on 008 02 0608 Australia wide).

Sales and Inquiries

Regional Offices		Information Inquiries	Bookshop Sales
SYDNEY	(02)	268 4611	268 4620
MELBOURNE	(03)	615 7000	615 7829
BRISBANE	(07)	222 6351	222 6350
PERTH	(09)	360 5140	360 5307
ADELAIDE	(08)	237 7100	237 7582
HOBART	(002)	20 5800	20 5800
CANBERRA	(06)	207 0326	207 0326
DARWIN	(089)	43 2111	43 2111
National Office			
ACT	(06)	252 6007	008 020 608

ABS Email Addresses

Keylink	STAT.INFO/ABS
X.400	(C:AU,A:TELMEMO,O:ABS,SN:INFO,FN:STAT)
Internet	STAT.INFO@ABS. TELEMEMO.AU

Information Services, ABS, PO Box 10, Belconnen ACT 2616

Project funded by
WESTERN AUSTRALIAN
HEALTH PROMOTION FOUNDATION

Australian Rotary Health Research Fund

Health Department of Western Australia

2430350001941
ISBN 0 642 20754 2

Recommended Retail Price: $35.00

ABS Catalogue No. 4303.5

Western Australian Child Health Survey