

Wellbeing indicators across the life cycle

Appendix 2

Child Indicators

Contents

Domain: Health.....	3
1. Smoking in pregnancy.....	3
2. Birthweight.....	5
3. Breastfeeding	7
4. Alcohol and drug use in pregnancy.....	8
5. Immunisation.....	10
6. Parental substance abuse (alcohol and illicit drugs).....	12
7. Injuries.....	14
8. Environmental tobacco smoke.....	15
9. Oral Health	16
10. Overweight and obesity.....	18
11. Nutrition.....	20
12. Sleep habits.....	22
Domain: Safety.....	23
13. Child abuse and neglect.....	23
14. Safe schools	25
Domain: Economic	26
15. Parental employment.....	26
Domain: Education and skills.....	28
16. Parental education	28
17. Cognitive/developmental resources (books, phone, internet, magazines, newspapers).....	30
Domain: Social and community.....	32
18. Organised child/youth recreational activities	32
19. Relationships at school	34

Domain: Health

1. Smoking in pregnancy

Measurement Options

- Rate of women smoking during pregnancy

NSW Domain

Health

Domains in other frameworks

- Physical (AIHW; Vic)

Indicator type

Objective

Time frame

Point in time

Unit of analysis

Individual level

Reliability *(statistical evidence as predictor of wellbeing, validated against other indicators, etc.)*

High

Smoking among pregnant women is associated with multiple adverse outcomes for children (preterm delivery, low birthweight, stillbirth, infant mortality, and in particular SIDS) and lowered cognitive development in preschool-aged children (Aliyu et al. 2007; Chan and Sullivan 2008; Hoff et al. 2007; Jauniaux and Burton 2007; Julvez et al. 2007; Key et al. 2007; Salihu and Wilson 2007; Triche and Hossain 2007).

Recent reviews have shown that there is *“sufficient evidence to prove a causal relationship between prenatal exposure to smoking and preterm birth, as well as childhood exposure to environmental tobacco smoking and SIDS, new-onset asthma, increased asthma severity, lung and middle ear infections and adult breast and lung cancer”* (Wigle et al. 2008).

Prenatal smoking can also affect later physical and mental functioning, with evidence of a dose-response relationship present (Lassen and Oei 1998).

Sensitivity *(degree to which measures can distinguish between different states of wellbeing)*

Not enough information in the literature to assess the sensitivity of the indicator, as the impact seems indirect, smoking in pregnancy → health of the unborn babies → wellbeing of the babies when they are born.

Relevance *(relevance across the life cycle {Q2 -FACS} and relevance across specific population of interest {Q3 – FACS})*

- Relevant for early childhood
- Relevant across specific population of interest including the Indigenous population.

In 2003, 17% of Australian women reported smoking during pregnancy, while over half of Aboriginal and Torres Strait Islander mothers reported smoking during pregnancy (Laws, Grayson and Sullivan, 2006).

Assessment of Useability: High

This assessment was based on three criteria:

1. Frequency used in key frameworks: Low
 2. Reliability: High
 3. Availability in NSW data: High
 - The Australian Institute of Health and Welfare's National Perinatal Data Collection. Data availability: Annual from 1991 onwards. See <http://www.aihw.gov.au/perinatal-data/>
-

2. Birthweight

Measurement Options

- Proportion of live born infants of low birthweight
 - Low birth weight ¹
-

NSW Domain

Health

Domains in other frameworks

- Physical (AIHW; Vic)
-

Indicator type

Objective

Time frame

Usually over a period like a year.

Unit of analysis

Individual (babies)

Reliability *(statistical evidence as predictor of wellbeing, validated against other indicators, etc.)*

High

Low birthweight is associated with pre-term births, multiple births, substance abuse, socioeconomic disadvantage and poor maternal health and lifestyle, but many of these are amenable to interventions (AIHW: Ford et al. 2003; AIHW: Laws et al. 2004; AIHW: Laws et al. 2007; Chomitz et al. 1995). Furthermore, those born with sub optimal birthweight are also more likely to self-report minor illness symptoms (Bellingham-Young et al. 2013).

Sensitivity *(degree to which measures can distinguish between different states of wellbeing)*

Weakly correlated with subjective wellbeing but strong indicator for objective wellbeing

Relevance *(relevance across the life cycle (Q2 -FACS) and relevance across specific population of interest {Q3 – FACS})*

Early childhood — relevant to population of interest, including:

- Indigenous populations
- People living in social housing or receiving social housing assistance
- People who are homeless or at-risk of homelessness

Among Indigenous populations in Australia, in 2004, the percentage of live born babies with low birth weight was more than double that of non-Indigenous populations (Laws et al., 2006). In 2001-2004 the rate of increase in low birth weight babies was also greater among babies born to Indigenous mothers (from 11% to 12%) than for babies born to non-Indigenous mothers (from 2.5% to 2.6%) (Leeds et al, 2007). There is also evidence that the proportion of babies with less favourable outcomes, such as preterm and low birth weight, decreases with socioeconomic advantage (Laws et al, 2007).

¹ WHO definitions:

- Low birth weight: Infants less than 2500g at birth
- Very low birth weight: Less than 1500g at birth
- Extremely low birth weight: less than 1000g at birth

Assessment of Useability: High

This assessment was based in three criteria:

1. Frequency used in key frameworks: Low
 2. Reliability: High
 3. Availability in NSW data: High
 - The Australian Institute of Health and Welfare's National Perinatal Data Collection. Data availability: Annual from 1991 onwards. See <http://www.aihw.gov.au/perinatal-data/>
-

3. Breastfeeding

Measurement Options

- Proportion of infants exclusively breastfed at 4 months of age
 - Increased rate of breastfeeding
-

NSW Domain

Health

Domains in other frameworks

- Physical (AIHW; Vic)
-

Indicator type

Objective

Time frame

Usually measured over a period, like a year

Unit of analysis

Individual (Women)

Reliability *(statistical evidence as predictor of wellbeing, validated against other indicators, etc.)*

High

The research shows that more exclusive and longer periods of breastfeeding reduce the risk of morbidity and mortality from infectious diseases, help growth and cognitive development, and protect against diseases later in life (Horta et al. 2007). Horta and Victora (2013) found that more exclusive and longer periods of breastfeeding has an odds ratio of 0.76 of overweight/obesity and 0.66 odds ratio of type2-diabetes.

There is significant evidence that non-breastfed babies are more likely to suffer ear, gastrointestinal and urinary tract infections, diabetes and childhood leukaemia, and they are also at greater risk of Sudden Infant Death Syndrome (Dyson et al., 2005; Chung et al. 2008). In addition, formula-fed infants are also more likely to become overweight or obese later in life, and mothers who do not breastfeed have an increased risk of developing breast or ovarian cancer (Chung et al., 2008).

Sensitivity *(degree to which measures are able to distinguish between different states of wellbeing)*

Not enough information in the literature to assess the sensitivity of the indicator in regard to the subjective wellbeing but strong indicator for objective wellbeing.

Relevance *(relevance across the life cycle (Q2 -FACS) and relevance across specific population of interest {Q3 – FACS})*

- Early childhood
 - Relevant for population of interest
-

Assessment of useability: High

This assessment was based on three criteria:

1. Frequency used in key frameworks: Low
 2. Reliability: High
 3. Availability in NSW data: High
 - The Australian Institute of Health and Welfare's National Perinatal Data Collection. Data availability: Annual from 1991 onwards. See <http://www.aihw.gov.au/perinatal-data/>
-

4. Alcohol and drug use in pregnancy

Measurement Options

- Proportion of pregnant women with self-reported substance use during pregnancy
 - Proportion of women with a positive toxicology screen during pregnancy
-

NSW Domain

Health

Domains in other frameworks

- Behavioural (AIHW)
-

Indicator type

Objective

Time frame

Usually measured as number of cases over 1 year

Unit of analysis

Individual (Women)

Reliability *(statistical evidence as predictor of wellbeing, validated against other indicators, etc.)*

High

Primary disabilities in children prenatally exposed to alcohol have a major impact on their daily life, with adults with the Fetal Alcohol Syndrome (FAS) more likely to have received special education, be unemployed, receive a disability pension, higher hospital admission rates for alcohol abuse and psychiatric disorders, and more likely to be prescribed psychotropic drugs (Rangmar et al. 2015).

FAS is currently recognised as the most common cause of mental retardation (Niccols 2007).

One study in Australia found that of the 92 FAS cases, 56% had growth deficiency, 53% had microcephaly, 86% had evidence of central nervous system dysfunction, 24% had additional birth defects, 5.4% had sensorineural deafness, and 4.3% had visual impairment (Elliott et al. 2007).

The range and severity of FAS (or FASD = Fetal alcohol spectrum disorders) differ a lot, and the symptoms are apparent to varying degrees throughout life, making diagnosis difficult. No national data on the prevalence of FASD exists in Australia (AIHW 2015). Estimates for live births range from 0.01 to 1.7 per 1,000 live births (Burns et al. 2013)

Studies in monkeys and rodents indicate that prenatal alcohol exposure adversely affects neonatal orienting, attention, and motor maturity, as well as activity level, executive function, response inhibition, and sensory processing later in life (Schneider et al. 2011).

A cohort study of 61,241 women in Ireland found that high consumption of alcohol was associated with very preterm birth (<32 weeks gestation) even after controlling for socio-demographic factors. Only three cases (0.05 per 1000 total births) were recorded, each in the low, moderate and high consumption groups (Mullally et al. 2011).

Maternal use of paracetamol and drugs for gastroesophageal reflux has been associated with an increased risk of childhood asthma in the child (Källénet al. 2013).

A study of marijuana, cocaine and opiates use during pregnancy found that after controlling for a comprehensive set of social, psychosocial, behavioural, and biomedical risk factors, none of the drugs individually were significantly related to low birth weight (Schempf and Strobino 2008). About 70% of the unadjusted effect of cocaine use on continuous birth weight was due to surrounding psychosocial and behavioural factors (smoking and stress), and most of the unadjusted effects of opiate use were explained by smoking and lack of early prenatal care (Schempf and Strobino 2008). After adjusting for any confounding effects, cannabis use does not seem to be associated with low birth weight or preterm birth (van Gelder et al. 2010)

Relevance: (*Relevance across the life cycle (Q2 -FACS) and Relevance across specific population of interest (Q3 – FACS))*)

- School age, transition, employment.
- People experiencing or at-risk of experiencing domestic and family violence:
- The predictors of prenatal alcohol use most consistently identified were pre-pregnancy alcohol consumption and having been abused or exposed to violence. Less consistent predictors of drinking during pregnancy were high income/social class and positive dependence screen (Skagerström, et al. 2011).
- Of 92 children with FAS in Australia, 65% were Indigenous, 51% had a sibling with FAS, and only 40% lived with a biological parent (Elliott et al. 2007).
- Indigenous women are less likely than non-Indigenous women to drink during pregnancy, but those who do, drink frequently and at high-risk levels. The population prevalence of FAS /partial FAS in remote Aboriginal communities of the Fitzroy Valley is the highest reported in Australia (Fitzpatrick et al. 2012).

Assessment of useability: Medium

This assessment was based on three criteria:

1. Frequency used in key frameworks: Low
2. Reliability: High
3. Availability in NSW data: Medium
 - There are surveys on pregnancy and alcohol abuse as separate questions (ABS National Health Survey), but none that relate the two — alcohol abuse while pregnant.

5. Immunisation

Measurement Options

- Rate of immunisation (per/1000 children)
-

NSW Domain

Health

Domains in other frameworks

- Behavioural (AIHW; Vic)
-

Indicator type

Objective

Time frame

Measured over a period of time, usually a year

Unit of analysis

Individual level, children 0–8 years old

Reliability *(statistical evidence as predictor of wellbeing, validated against other indicators, etc.)*

High

The failure to fully immunise children has the potential to increase mortality and disease burden considerably, especially in young children with immature immune systems. Children not completely immunised remain at risk of contracting communicable diseases with short- and long-term health consequences (England et al. 2001; WHO 2005, 2007a).

Vaccinations currently save an estimated three million lives per year throughout the world, making it one of the most cost-effective health interventions available (Immunisation Myths and Realities, Department of Health and Aging, 2013).

Sensitivity *(degree to which measures are able to distinguish between different states of wellbeing)*

Not enough information in the literature to assess the sensitivity of the indicator, but the impact seems indirect, immunisation → health of the child → wellbeing (England et al. 2001; WHO 2005, 2007a).

May also impact others wellbeing, if children are not immunized and risk spreading a disease to other vulnerable children.

Relevance: (Relevance across the life cycle {Q2 –FACS} and Relevance across specific population of interest {Q3 – FACS})

- Early childhood
 - Relevant across population of interest including:
 - Indigenous populations
 - People living in social housing or receiving social housing assistance
 - People who are homeless or at risk of homelessness
 - Families of low socio-economic status and Indigenous groups are more likely to not have children immunised on time (at 12 months of age, vaccination coverage 6–8% lower in Indigenous children as a result of delayed vaccination, but the difference dissipates after 24 months of age (Menziés et al. 2008).
-

Assessment of useability: High

This assessment was based on three criteria:

1. Frequency used in key frameworks: Low
 2. Reliability: High
 3. Availability in NSW data: High
 - AIHW Children's Headline Indicators <http://www.aihw.gov.au/chi/>
 - Australian Immunisation Register at <https://www.humanservices.gov.au/customer/services/medicare/australian-immunisation-register>
 - ABS National Health Survey Cat 4364.0.55.001: 2011–2012, 2014–2015
-

6. Parental substance abuse (alcohol and illicit drugs)

Measurement Options

- Percentage of parents engaging in risky and high risk drinking patterns²
 - Percentage of parents with self-reported substance use
-

NSW Domain

Health

Domains in other frameworks

- Environment (AIHW)
-

Indicator type

Objective

Time frame

Assessed over a period of time, usually a year

Unit of analysis

Individual level, children 0-8 years old

Reliability *(statistical evidence as predictor of wellbeing, validated against other indicators, etc.)*

High

Parental substance use significantly increases the risks for poor health and developmental delays in children. Risks are closely bound up with parental psychopathology, parenting practices, family environment and socioeconomic factors, putting children at risk of developing anxiety and depression disorders, psychological, emotional, behavioural and physical conditions (Dawe et al. 2006; Gruenert et al. 2004; Johnson and Leff 1999, NSW DoCS 2006; Patton 2003).

While not all parents with drug problems have difficulties in caring for their children, the available research indicates an increased likelihood of impaired parenting capacity and poor child outcomes (Barnard and McKeganey 2004)

Using data from a household survey of drug use in Washington State, Drapela and Mosher (2007) found that youth who are strongly attached to fathers in households where parents frequently use drugs are more likely to use both licit and illicit drugs than adolescents strongly bonded to nondrug-using parents. Adolescents' perceptions of drug availability and associations with drug-using peers are also significantly higher among youth strongly attached to fathers in households where parent drug use is present (Drapela and Mosher 2007).

Adolescents who use drugs are significantly more likely to have one or more parent who use drugs. Similarly, adolescents who perceive their parents as having permissive views about drug use by youths are significantly more likely to use drugs than those who perceive their parents as holding non-permissive views (McDermott 1984).

Sensitivity *(degree to which measures are able to distinguish between different states of wellbeing)*

Not enough information in the literature to assess the sensitivity of the indicator

Relevance *(Relevance across the life cycle {Q2 –FACS} and Relevance across specific population of interest {Q3 – FACS})*

- Early childhood, school age, transition.
 - Relevant across specific population of interests
-

² The WHO Alcohol Use Disorder Identification Test (AUDIT) is a reliable way of detecting risky and high risk drinking patterns (Ward and Snow 2009).

Assessment of useability: High

This assessment was based on three criteria:

1. Frequency used in key frameworks: Low
 2. Reliability: High
 3. Availability in NSW data: High
 - Australian Bureau of Statistics' (ABS) 1997 and 2007 National Survey of Mental Health and Wellbeing
-

7. Injuries

Measurement Options

- Age-specific death rates from all injuries for children aged 0–4, 5–9 and 10–14 years old
 - Decreased rate of unintentional injury
 - Wearing protective gear such as bicycle helmets, seatbelts
-

NSW Domain

Health or Safety

Domains in other frameworks

- Environment
 - Physical health, development, & safety³
-

Indicator type

Objective

Time frame

Depending on indicator, usually assessed over a period of time, for example, a year

Unit of analysis

Individual child

Reliability (*statistical evidence as predictor of wellbeing, validated against other indicators, etc.*) High

Unintentional injuries are the leading cause of mortality and disability in pre-schoolers in many developed countries. Suffocation, falls, motor vehicle accidents, and drowning are the most common causes of death due to unintentional injuries in infants and toddlers. Common causes of hospitalisations include burns and poisoning. Childhood injuries may also be intentional (abuse, family/community violence, including homicide) (Berry et al. 2010; Cripps and Steel 2006; Garzon 2005; Howard 2006; Schnitzer 2006; WHO 2006).

Sensitivity (*degree to which measures are able to distinguish between different states of wellbeing*)

Highly correlated with wellbeing

Relevance (*Relevance across the life cycle {Q2 –FACS} and Relevance across specific population of interest {Q3 – FACS}*)

Early childhood, school age, transition and across the life cycle (but this indicator has not been discussed in the overall population framework)

Relevance across specific population of interest: Children from low socio-economic backgrounds and Indigenous Australian children have a disproportionately high risk of injuries leading to death or hospitalisation.

Increased risk for children of single parents, young or poorly educated mothers, parents with drug or alcohol abuse, children in large families, and in poor housing (Vic, AIHW 2005).

Assessment of useability: High

This assessment was based on three criteria:

1. Frequency used in key frameworks: High
 2. Reliability: High
 3. Availability in NSW data: High
 - AIHW mortality database
 - ABS Birth and Death registered see Cat. No. 3302.0 — Deaths, Australia
 - ABS National Health Survey Cat 4364.0.55.001: 2011–2012, 2014–2015 for injuries statistics
-

³ AIHW; VIC, UNICEF.

8. Environmental tobacco smoke

Measurement Options

- Decreased rate of children exposed to tobacco smoke in the home
-

NSW Domain

Health

Domains in other frameworks

- Environment (AIHW; Vic)
-

Indicator type

Objective

Time frame

Depending on indicator, point in time or assessed over a time period, for example, a year

Unit of analysis

Individual child

Reliability *(statistical evidence as predictor of wellbeing, validated against other indicators, etc.)*

High

Exposure to passive smoking is of the most hazardous environmental exposure for children. The increased risks of adverse health outcomes include: SIDS, acute respiratory infections, middle-ear infections, asthma, respiratory symptoms, and slowed lung growth. Benefits of reduced exposure include: improved health and school performance, reduced absenteeism from school, reduced uptake of smoking and less frequent smoking among children who smoke (CDC 2007; Commonwealth of Australia 2002; WHO 2007b).

Passive smoking is also associated with an increased prevalence of asthma among adult never-smokers, children becoming more likely to start smoking, and it is also a major contributor to lower airway irritants (Larsson et al. 2001). Smoking households are also over-represented among SIDS cases (Golding 1997), and exposure to tobacco smoke also has an impact on infant behaviour and irritability (Mansi et al. 2007).

Prenatal smoking may also affect later physical and mental functioning, with evidence of a dose-response relationship present (Lassen and Oei, 1998).

Sensitivity *(degree to which measures are able to distinguish between different states of wellbeing)*

Not enough information in the literature to assess the sensitivity of the indicator

Relevance *(Relevance across the life cycle {Q2 –FACS} and Relevance across specific population of interest {Q3 – FACS})*

- Relevant across the whole life cycle (but interestingly, this indicator has not been discussed in the grey literature discussing overall population frameworks)
 - Relevant across specific population of interest
 - Indigenous populations
 - In 2003, over half of Aboriginal and Torres Strait Islander mothers reported smoking during pregnancy (Laws et al. 2006).
-

Assessment of useability: High

This assessment was based on three criteria:

1. Frequency used in key frameworks: Low
 2. Reliability: High
 3. Availability in NSW data (including administrative data)
 - Australian Bureau of Statistics', National Health Survey 4364.0.55.001
-

9. Oral Health

Measurement Options

- Cleaning teeth at least twice a day
 - Ratio of dentists to population
-

NSW Domain

Health

Domains in other frameworks

- Behavioural
- Health service access

(AIHW; VIC; CSE)

Indicator type

Objective

Time frame

Depends on indicator, usually point in time, e.g., ratio of dentists to population on Census night

Unit of analysis

Individual level

Reliability *(statistical evidence as predictor of wellbeing, validated against other indicators, etc.)*

High

Untreated tooth decay facilitates abscess formation, cellulitis, and the systemic spread of disease. It can also lead to a failure to thrive at school and school absences, negatively affecting performance at school (Berg & Coniglio 2006; Petersen 2003; Watt 2005).

In Victoria, statistics indicate that a significant proportion of children (42%) from birth to five years had tooth decay, with 75% of these being untreated (Dental Health Service Victoria 2003), and almost half will have developed tooth decay by school age (Gussy et al. 2008).

Nationally, in 2010 the proportion of children with tooth decay varied from 48% for children aged 5, to 68% for children aged 9 (data excludes NSW and Vic). Children aged 5 and 6 had higher rates of untreated decay than older children, while numbers of filled teeth was the highest for children aged 8 and 9 (Oral health and dental care in Australia 2015).

Treating tooth decay in pre-school children would increase growth rates and the quality of life of millions of children (Sheiham 2006).

Severe untreated tooth decay is common in pre-school children in many countries. Children with severe tooth decay weighed less than controls, and after treatment of decayed teeth there was more rapid weight gain and improvements in their quality of life. This may be due to dietary intake improving because pain affected the quantity and variety of food eaten, and second, chronic inflammation from tooth decay related pulpitis and abscesses is known to suppress growth through a metabolic pathway and to reduce haemoglobin as a result of depressed erythrocyte production (Sheiham 2006).

Dental problems may result in pain, avoidance of certain foods, and a feeling of discomfort about appearance, with social impacts such as withdrawal behaviours or a reduced ability to participate in certain activities (Oral health and dental care in Australia 2015).

Sensitivity *(degree to which measures are able to distinguish between different states of wellbeing)*

Not enough information in the literature to assess the sensitivity of the indicator

Relevance (*Relevance across the life cycle (Q2 -FACS) and Relevance across specific population of interest (Q3 – FACS)*)

- Relevant across the whole life cycle
- Relevant for specific populations:
- People living in social housing or receiving social housing assistance
- People from culturally and linguistically diverse communities
- Indigenous populations
- Tooth decay is particularly acute in children from lower socio-economic backgrounds due to living in “materially deprived neighbourhoods”, and who tend to have parents with lower educational levels, have diets high in sugary foods and drink, and brush their teeth less often (Pine et al. 2000).
- Children from Indigenous, and culturally and linguistically diverse backgrounds are also twice as likely to have tooth decay compared to non-Indigenous children (AIHW 2003).

Assessment of useability: High

This assessment was based on three criteria:

1. Frequency used in key frameworks: High
 2. Reliability: High
 3. Availability in NSW data: High
 - Child Dental Health Survey, conducted by the Australian Institute of Health and Welfare’s Dental Statistics Research Unit
 - The ABS Census of Population and Housing, five yearly for data on dentist
-

10. Overweight and obesity

Measurement Options

- Proportion of children who are overweight and obese for their age and gender
-

NSW Domain

Health

Domains in other frameworks

- Behavioural
- Health

(AIHW; ONS children)

Indicator type

Objective

Time frame

Depending on indicator, point in time or measured over a period, for example, a year

Unit of analysis

Individual level (child)

Reliability *(statistical evidence as predictor of wellbeing, validated against other indicators, etc.)*

High

Obese and overweight children have a higher risk of being overweight and obese in adulthood. Possible health complications include gallstones, hepatitis, and sleep apnea, and higher risks of morbidity and mortality later in life, and it may also affect social acceptance and self-esteem. (Griffiths et al. 2006; GUO et al.; 2002; Hayden-Wade et al. 2005; Must and Strauss 1999).

Being overweight or obese is also a major risk factor for chronic and preventable conditions such as type 2 diabetes, heart disease, hypertension, stroke, musculoskeletal disorders and impaired psychosocial functioning, and there is also evidence that obesity is overtaking smoking as the major cause of preventable death in Australia (AMA Obesity 2016).

Sensitivity *(degree to which measures are able to distinguish between different states of wellbeing)*

Not enough information in the literature to assess the sensitivity of the indicator

Relevance *(Relevance across the life cycle (Q2 -FACS) and Relevance across specific population of interest {Q3 – FACS})*

- Relevant across the whole life cycle.
- Relevant for specific populations:
- Indigenous populations
- Children living in out-of-home care
- People from culturally and linguistically diverse communities
- People living with disabilities

“Although obesity is affecting the whole community, the incidence of overweight and obesity is disproportionate among socially and economically disadvantaged groups, some culturally and linguistically diverse groups, Aboriginal people and isolated individuals” (Gill et al., 2005). Also, some studies (De, Small, & Baur, 2008; Patradoon-Ho, Scheinberg, & Baur, 2005) have shown that children and young people with acquired brain injuries or developmental disabilities are more likely to be overweight and obese than the general population of children.” (NSW Government submission 2008).

Assessment of useability: High

This assessment was based on three criteria:

1. Frequency used in key frameworks: Low
 2. Reliability: High
 3. Availability in NSW data: High
 - Australian Bureau of Statistics (ABS):
 - 4324.0.55.001 — Microdata: Australian Health Survey, National Health Survey 2011–2012, 2014–2015
 - HILDA waves 1–15
 - RP DV LBMI DV: [SCQ] Body Mass Index
 - RP DV LBMHT DV: [SCQ] Height in centimetres
 - RP DV LBMWT DV: [SCQ] Weight in kilograms
-

11. Nutrition

Measurement options

- Food security: P\proportion of families who are food insecure
 - Eating 5 portions of fresh fruit and vegetables a day
-

NSW Domain

Health

Domains in other frameworks

- Behavioural
- Physical health, development, & safety

(AIHW; VIC; UNICEF)

Indicator type

Objective

Time frame

Depending on indicator, usually measured over a period like a day, but may also be point in time

Unit of analysis

Individual level or household level

Reliability *(statistical evidence as predictor of wellbeing, validated against other indicators, etc.)*

High

Good nutrition supports rapid growth and development during childhood. Food choices are commonly shaped by individual preferences, as well as cultural and family influences. Therefore, it is important to establish healthy eating patterns to reduce the risks associated with overweight and obesity both in childhood as well as later in life (AIHW 2009a; NHMRC 2003).

In terms of specific food behaviours, positive measures include eating breakfast (HSBC 2013/2014), consuming fruit (HSBC 2013/2014), and having regular family meals (Hampden-Thompson et al. 2008). Cross-sectional and longitudinal studies show that breakfast consumption is inversely related to BMI and overweight in children and adolescents, while fruit consumption has been linked to positive health in the short and long term, decreasing the risk of chronic diseases (HSBC 2013/2014). Children in families that eat dinner together also have better educational outcomes (Hampden-Thompson et al. 2008). Conversely, soft drink consumption is higher among adolescents than with any other age groups. It is associated with a greater risk of weight gain, obesity, chronic diseases, and dental health issues (Malik et al. 2006).

Sensitivity *(degree to which measures are able to distinguish between different states of wellbeing)*

Not enough information in the literature to assess the sensitivity of the indicator,

Relevance *(Relevance across the life cycle {Q2 –FACS} and Relevance across specific population of interest {Q3 – FACS})*

- Relevant across the whole life cycle
 - Relevance across specific population of interest:
 - Indigenous people
 - People from culturally and linguistically diverse communities
 - Aboriginal and Torres Strait Islander people spend on average a larger proportion of their income on food; 30% of Indigenous adults worry at least occasionally about going without food (SIGNAL, 2001).
 - Refugees are also vulnerable due to a range of difficulties including language and literacy, lack of familiarity with local produce and where to buy it, lack of knowledge and skills in food preparation and storage due to years of living in refugee camps, and inadequate income (CEH, 2008).
 - Fruit consumption lower in low affluence families (HSBC 2013–2014).
-

Assessment of useability: High

This assessment was based on three criteria:

1. Frequency used in key frameworks: High
 2. Reliability: High
 3. Availability in NSW data: High
 - Australian Bureau of Statistics (ABS) National Health Survey to report on the number of serves of fruit and vegetables, 2011–2012, 2014–2015
-

12. Sleep habits

Measurement Options

- Adequate sleep hours/night
-

NSW Domain

Health

Domains in other frameworks

- Physical health, development & safety
 - UNICEF
-

Indicator type

Objective (hours/night per age*) and subjective (individual needs)⁴

Time frame

Measured over one night, but averaged over a longer period, for example, a year

Unit of analysis

Individual child

Reliability *(statistical evidence as predictor of wellbeing, validated against other indicators, etc.)*

High

Getting optimal hours of sleep has been shown to positively impact emotional, psychological and social wellbeing (Howell et al. 2008). After controlling for demographic differences, optimal sleepers report fewer symptoms of depression and anxiety, and higher levels of environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance (Hamilton et al. 2007).

School aged children with inadequate sleep are more likely to report problems at school, or have a father with fair or poor health. (Smaldone et al. 2007). Subjective wellbeing largely depends on mood, and can be linked to rhythms in many physiological markers (melatonin and cortisol). Birchler-Pedross et al. (2009) demonstrated age and gender impact on wellbeing in relation to sleep deprivation with older age and women responding with greater impairment

Sensitivity *(degree to which measures are able to distinguish between different states of wellbeing)*

Not enough information in the literature to assess the sensitivity of the indicator

Relevance *(Relevance across the life cycle {Q2 –FACS} and relevance across specific population of interest {Q3 – FACS})*

- School-aged children, but relevant across the whole life cycle.
 - Relevance across specific population of interest
-

Assessment of useability: High

This assessment was based on three criteria:

4. Frequency used in key frameworks: Low
 5. Reliability: High
 6. Availability in NSW data: High
 - LSAC an indicator "In the past one month how often would you say this child has had a problem with trouble sleeping?"
-

⁴ The amount of sleep a child requires varies, but the Sleep Help Foundation provides the following guidelines:

- Pre-schoolers 3–5 years: 10 –13 hours
- School-aged children 6–13 years: 9–11 hours
- Teenagers 14–17 years: 8–10 hours

Domain: Safety

13. Child abuse and neglect

Measurement Options

- Rate of children who were the subject of child protection substantiation in a given year
 - Child protection: Decreased rate of re-notifications to child protection
-

NSW Domain

Safety

Domains in other frameworks

- Environment
 - AIHW; VIC
-

Indicator type

Objective

Time frame

Indicators are usually measured over a period of time, for example, a year

Unit of analysis

Individual child

Reliability *(statistical evidence as predictor of wellbeing, validated against other indicators, etc.)*

High

Child abuse and neglect includes: physical abuse, emotional maltreatment, neglect, sexual abuse and the witnessing of family violence. It can have severe short- and long term effects on cognitive, socio-emotional and behavioural development and the adverse effects can last a lifetime.

Factors (often interrelated) such as: financial difficulties, limited social support, domestic violence, mental or physical disability, alcohol and substance abuse, and problems with unsafe, unsanitary or uninhabitable housing all contribute to the level of risk of abuse and neglect (Glaser 2000; Green et al. 2010; Hildyard and Wolfe 2002; Layton 2003; Ronan et al. 2009. Tennant et al. 2003; Vic DHS 2002).

Sensitivity *(degree to which measures are able to distinguish between different states of wellbeing)*

Correlated highly with wellbeing

Relevance *(Relevance across the life cycle {Q2 –FACS} and relevance across specific population of interest {Q3 – FACS})*

- Relevant across the life cycle.
 - Relevant for this specific population
 - People experiencing or at-risk of experiencing domestic and family violence
 - Children and young people who are vulnerable or at-risk of significant harm.
-

Assessment of useability: High

This assessment was based on three criteria:

1. Frequency used in key frameworks: Low possibly due to lack of data
 2. Reliability: High
 3. Availability in NSW data: High
 - The Australian Institute of Health and Welfare's National Child Protection Data Collection with the note: the difficulties in defining measures and collecting data. Available data relate only to situations where children have come to the attention of child protection authorities.
-

14. Safe schools

Measurement Options

- Safe from bullying, discrimination, crime
 - Percentage of children who have been bullied
-

NSW Domain

Safety

Domains in other frameworks

- Context
- Our relationships

(UNICEF, ONS children)

Indicator type

Objective

Time frame

Usually point in time, can also be measured over a time period, for example a year

Unit of analysis

Individual (Child)

Reliability *(statistical evidence as predictor of wellbeing, validated against other indicators, etc.)*

Medium

Using structured clinical assessments, Gladstone et al. (2006) studied a group of adult males and females presenting to an outpatient depression clinic, to examine the childhood risk factors and the distinguishing comorbid features associated with those reporting exposure to bullying. Just over a quarter of both men and women reported having experienced bullying that was severe and traumatic.

More of these subjects in the Gladstone et al. (2006) study also reported several other well studied childhood risk factors. Childhood correlates that were particularly relevant for exposure to bullying were parental over control, illness or disability, and the tendency to have an inhibited temperament early in life. The experience of childhood bullying was strongly related to high levels of comorbid anxiety, both in terms of greater levels of state anxiety and a higher prevalence of both social phobia and agoraphobia. Independent of other childhood risk factors, exposure to bullying was especially predictive of a subjects' higher levels of general state anxiety and the tendency to express anxious arousal externally when under stress. These results are compatible with both cross-sectional and prospective studies of child and adolescent samples, and highlight the potential etiological significance of early peer victimization experiences for a percentage of adults suffering from depression with comorbid anxiety.

Sensitivity *(degree to which measures are able to distinguish between different states of wellbeing)*

Not enough information in the literature to assess the sensitivity of the indicator

Relevance *(Relevance across the life cycle {Q2 –FAC}) and relevance across specific population of interest {Q3 – FACS}*

- Early childhood; school age
 - Relevant across specific population of interest
-

Assessment of useability: Medium

This assessment was based on three criteria:

1. Frequency used in key frameworks: Medium
 2. Reliability: Medium
 3. Availability in NSW data: Low
-

Domain: Economic

15. Parental employment

Measurement options

- Steady parental employment and adequate income/benefits
 - Working age parents/guardians employment/unemployed/inactivity
 - Proportion of dependent children aged 0–15 years old in a family where no parent is working
-

NSW Domain

Economic

Domains in other frameworks

- Socioeconomic
- Context
- What we do

(AIHW; UNICEF: ONS children; CSE)

Indicator type

Objective

Time frame

Can be point in time or measured over a year

Unit of analysis

Individual level

Reliability *(statistical evidence as predictor of wellbeing, validated against other indicators, etc.)*

High

Parental employment increases the amount of economic resources available to families, protects against social exclusion and inter-generational disadvantage, provides positive role models to children, increases financial stability, self-confidence and social contacts for parents, with positive flow-on effects (AIHW 2009b).

Whether a child lives in a household where parents/guardians are employed, unemployed or inactive in the labour market and whether this status fits with the parents' wishes and expectations can have a considerable effect on their wellbeing, with no parent in paid work shown to increase the risk of school aged children's social exclusion (Miranti et al. 2015).

Sensitivity *(degree to which measures are able to distinguish between different states of wellbeing)*

High — strong indicator of objective wellbeing

Relevance *(Relevance across the life cycle {Q2 –FACS} and relevance across specific population of interest {Q3 – FACS})*

- Early childhood, school age, transition.
 - Relevance across specific population of interest
-

Assessment of useability: High

This assessment was based on three criteria:

1. Frequency used in key frameworks: High
 2. Reliability: High
 3. Availability in NSW data (including administrative data) High
 - The Longitudinal Study of Australian Children (LSAC)
-

Domain: Education and skills

16. Parental education

Measurement Options:

- Highest level of education attained by the parent/s or carers
-

NSW Domain

Education and skills

Domains in other frameworks

- Socioeconomic
- Family

(AIHW; UNICEF)

Indicator type

Objective

Time frame

Point in time

Unit of analysis

Individual level

Reliability *(statistical evidence as predictor of wellbeing, validated against other indicators, etc.)*

Medium

No family member completing year 12 has been shown to increase the risk of school aged children's social exclusion (Miranti et al. 2015).

Parental, and in particular maternal, education is a significant factor in child development. Low maternal education is related to adverse health outcomes including decreased use of antenatal care, low birthweight, smoking during pregnancy, stillbirths and other forms of infant mortality, and lower likelihood of starting/persisting with breastfeeding (Acevedo-Garcia et al. 2007; Arntzen et al. 2008; du Prel et al. 2006; House of Representatives 2007; Kalil et al. 2009; Luo et al. 2006; WHO 2007c; Yu 2008).

Sensitivity *(degree to which measures are able to distinguish between different states of wellbeing)*

High — strong indicator of objective wellbeing

Relevance *(Relevance across the life cycle {Q2 – FACS} and relevance across specific population of interest {Q3 – FACS})*

- Early childhood, school age.
 - Relevant across population of interest
-

Assessment of useability: High

This assessment was based on three criteria:

1. Frequency used in key frameworks: High
 2. Reliability: Medium
 3. Availability in NSW data : High
 - ABS Census Population and Housing, five yearly data
 - ABS Survey of Income and Housing (SIH), CURF, 2002–2003, 2005–2006, 2007–2008, 2011–2012, 2013–2014
 - HILDA, waves 1–15, annually since 2001
 - ABS, Education and Work, annually 1998–2015
-

17. Cognitive/developmental resources (books, phone, internet, magazines, newspapers)

Measurement Options

- Proportion of dependent children aged 0–15 years old living in household with no internet access
-

NSW Domain

Education and skills

Domains in other frameworks

- Context
- Connectedness

(UNICEF; CSE)

Indicator type

Objective

Time frame

Point in time

Unit of analysis

Individual living in household

Reliability *(statistical evidence as predictor of wellbeing, validated against other indicators, etc.)*

High

Internet access provides increasingly important evidence about the likely ability of children to connect to others online. The implications of internet use extend beyond its education potential (Abello et al. 2012). There is also a high correlation between no internet, being in the bottom income quintile, and no Year 12 (Abello et al. 2012).

Gross et al. (2002) argued that the claim ‘there is no simple main effect of the Internet on the average person’ applies to early adolescents as well, as internet use varies greatly between the users.

Subrahmanyam and Lin (2007) noted that the Internet has become an important social context for adolescents’ development alongside more traditional activities such as physical activities and face to face interactions with peers. As well as using it for instrumental purposes such as information gathering for school work, adolescents use it for communication purposes, and explore typical adolescent issues such as sexuality, identity and partner selection. Their analysis showed that loneliness was not related to the total time spent online or on email, and that the gender and participants’ perceptions regarding their online relationships were the only variables that predicted loneliness.

Sarriera et al. (2015) studied the relationship between children’s (aged 10–14) perception of their available material resources and their subjective wellbeing (n= 13,953) in eight countries. They tested a relational model for predicting subjective wellbeing and applied structural equation modelling to the data. The study revealed significant relationships between material resources and child subjective wellbeing in each country.

Sensitivity *(degree to which measures are able to distinguish between different states of wellbeing)*

Medium

Relevance *(Relevance across the life cycle {Q2 – FACS} and relevance across specific population of interest {Q3 – FACS})*

- Early childhood, school age.
 - Relevant across population of interest
-

Assessment of useability: High

This assessment was based on three criteria:

1. Frequency used in key frameworks: Low
 2. Reliability: High
 3. Availability in NSW data (including administrative data) High
 - Special data request from ABS Census Population and Housing, 5 yearly data for internet connection
-

Domain: Social and community

18. Organised child/youth recreational activities

Measurement Options

- Percentage of school-aged children participating in school clubs and extracurricular activities in school
 - Percentage of school-aged children participating in organized recreation activities and activities at community organisations/institutions
-

NSW Domain

Education and skills

Domains in other frameworks

- Context
- Relationships

(UNICEF)

Indicator type

Objective

Time frame

Depending on indicator, usually measured over a period like a year

Unit of analysis

Individual, children

Reliability *(statistical evidence as predictor of wellbeing, validated against other indicators, etc.)*

High

Sport and vigorous recreational activity are positively associated with emotional wellbeing independently of gender, social class, health status, and use of hospital services (Steptoe and Butler 1996). A study of children in a conflict zone (Palestine) showed that child-focused interventions involving structured activities improved the children's emotional and behavioural wellbeing (but not hopefulness) (Loughry et al. 2006).

Fredricks and Eccles (2010) found that greater involvement in extracurricular activities is associated with academic adjustment, psychological competencies, and a positive peer context, with the results strongest for the older group of youth.

Park (2004) discussed longitudinal studies of the effects of participation in extracurricular activities which also support these findings. Extracurricular participation reduces both internalizing (depression) and externalizing (delinquency) problems, especially for youth with detached relationships from their parents (Mahoney 2000; Mahoney and Cairns 1997; Mahoney and Stattin 2002; Mahoney, Stattin, and Magnusson 2001). A critical factor in determining the benefits of extracurricular activities is the emotional support provided by the activity leader (Mahoney and Stattin 2000). The lesson for youth development programs is obvious: program leaders must be supportive.

Sensitivity *(degree to which measures are able to distinguish between different states of wellbeing)*

Medium to High

Relevance *(Relevance across the life cycle {Q2 – FACS} and relevance across specific population of interest {Q3 – FACS})*

- Early childhood; School age; transition
 - Relevant for specific population of interest
-

Assessment of useability: High

This assessment was based on three criteria:

1. Frequency used in key frameworks: Low
 2. Reliability: High
 3. Availability in NSW data: High
 - The Longitudinal Study of Australian Children (LSAC)
-

19. Relationships at school

Measurement Options

- Percentage of children who self-report a sense of belonging at school and peer acceptance
-

NSW Domain

Social and community

Domains in other frameworks

- Relationships
- Our relationships

(UNICEF; ONS children)

Indicator type

Subjective

Time frame

Point in time

Unit of analysis

Individual child

Reliability *(statistical evidence as predictor of wellbeing, validated against other indicators, etc.)*

Medium

The results from a study examining the relation between the global happiness and school-related happiness showed a strong relationship between global and school-related happiness and social relationships. The most popular choices for happiness increasing factors were success in school, more free time and success in a hobby. However, the choices were dependent on the level of global happiness. The least happy students wanted to have more friends, better looks, more money and a peaceful family life. The results confirm that safe social relations are a primary factor underlying children's happiness (Uusitalo-Malmivaara 2012).

The findings from a study of primary-aged students also indicate that a sense of friendship, belonging and optimism are strong indicators of children's happiness (O'Rourke and Cooper 2010).

Sensitivity *(degree to which measures are able to distinguish between different states of wellbeing)*

Strongly correlated with subjective wellbeing

Relevance *(Relevance across the life cycle {Q2 –FACS} and relevance across specific population of interest {Q3 – FACS})*

- School age; Transition
 - Relevant across specific population of interest
-

Assessment of useability: Medium

This assessment was based on three criteria:

1. Frequency used in key frameworks: Low
 2. Reliability: Medium
 3. Availability in NSW data (including administrative data) High
 - The Longitudinal Study of Australian Children (LSAC)
-