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What are the factors associated with good mental health among Aboriginal children in urban New South Wales, Australia? Phase I findings from the Study of Environment on Aboriginal Resilience and Child Health (SEARCH)

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Abstract

Objective: To identify the factors associated with 'good' mental health among Aboriginal children living in urban communities in New South Wales, Australia.

Design: Cross-sectional survey (phase I of a longitudinal study).

Setting: 4 Aboriginal Community Controlled Health Services that deliver primary care. All services were located in urban communities in New South Wales, Australia.

Participants: 1005 Aboriginal children aged 4-17 years who participated in phase I of the Study of Environment on Aboriginal Resilience and Child Health (SEARCH).

Primary outcome measure: Carer report version of the Strengths and Difficulties Questionnaire. Scores 'good' mental health for the purposes of this article.

Results: The majority (72%) of SEARCH participants were not at high risk for emotional or behavioural problems. After adjusting for the relative contributions of significant demographic, child and carer health factors, the factors associated with good mental health among SEARCH children were having a carer who was not highly psychologically distressed (OR=2.8, 95% CI 1.6 to 5.1); not suffering from frequent chest, gastrointestinal or skin infections (OR=2.8, 95% CI 1.8 to 4.3); and eating two or more servings of vegetables per day (OR=2.1, 95% CI 1.2 to 3.8). Being raised by a foster carer (OR=0.2, 95% CI 0.01 to 0.71) and having lived in 4 or more homes since birth (OR=0.62, 95% CI 0.39 to 1.0) were associated with significantly lower odds of good mental health. Slightly different patterns of results were noted for adolescents than younger children.

Conclusions: Most children who participated in SEARCH were not at high risk for emotional or behavioural problems. Promising targets for efforts to promote mental health among urban Aboriginal children may include the timely provision of medical care for children and provision of additional support for parents and carers experiencing mental or physical health problems, for adolescent boys and for young people in the foster care system.

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BMJ Open What are the factors associated with good mental health among Aboriginal children in urban New South Wales, Australia? Phase I findings from the Study of Environment on Aboriginal Resilience and Child Health (SEARCH)

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ABSTRACT

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Setting: 4 Aboriginal Community Controlled Health Services that deliver primary care. All services were located in urban communities in New South Wales, Australia.

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Results: The majority (72%) of SEARCH participants were not at high risk for emotional or behavioural problems. After adjusting for the relative contributions of significant demographic, child and carer health factors, the factors associated with good mental health among SEARCH children were having a carer who was not highly psychologically distressed (OR=2.8, 95% CI 1.6 to 5.1); not suffering from frequent chest, gastrointestinal or skin infections (OR=2.8, 95% CI 1.8 to 4.3); and eating two or more servings of vegetables per day (OR=2.1, 95% CI 1.2 to 3.8). Being raised by a foster carer (OR=0.2, 95% CI 0.01 to 0.71) and having lived in 4 or more homes since birth (OR=0.62, 95% CI 0.39 to 1.0) were associated with significantly lower odds of good mental health. Slightly different patterns of results were noted for adolescents than younger children.

Conclusions: Most children who participated in SEARCH were not at high risk for emotional or behavioural problems. Promising targets for efforts to promote mental health among urban Aboriginal children may include the timely provision of medical care for

Strengths and limitations of this study

- The current study makes an important contribution to the small body of research exploring the mental health of Aboriginal children. We have taken a strengths-based approach and, to the best of our knowledge, are the first to consider the impact of carer psychological distress.
- The impacts of individual, family and community factors on mental health are explored. The measure of mental health used (the Strengths and Difficulties Questionnaire) has been previously validated for use among urban Aboriginal children in New South Wales.
- The current study uses carer report data that may be less accurate than physical examination for some variables (eg, oral health).
- The results reported here are cross-sectional; thus, we are unable to infer causation in the relationships noted.
- All data presented pertain to Aboriginal children and families recruited through four Aboriginal Community Controlled Health Services in urban areas of New South Wales; it is unclear how generalisable these results are to Aboriginal children living in other parts of Australia.

children and provision of additional support for parents and carers experiencing mental or physical health problems, for adolescent boys and for young people in the foster care system.

BACKGROUND

Good mental health during childhood and adolescence allows young people to lay the foundations for a successful adulthood.

Good mental health during this period is not a given, however. Indeed, more than half of the burden of disease amongst 15–25 year olds is accounted for by mental health and substance abuse disorders,¹ and 75% of the mental disorders that will emerge across the life-span have become evident before the age of 25.²

Aboriginal Australians make up 3% of the Australian population and have a life expectancy over 10 years less than that of non-Aboriginal Australians.³ The small amount of evidence available suggests that Australian Aboriginal children and adolescents experience higher levels of mental health-related harm than other young people^{4 5} including suicide rates that are several times higher than that of non-Aboriginal Australian youth.^{4 6} These high levels of harm are linked to greater exposure to many of the known risk factors for poor mental health and to the pervasive trauma and grief, which continues to be experienced by Aboriginal peoples due to the legacy of colonisation.^{7 8} Loss of land and culture has played a major role in the high rates of premature mortality, incarceration and family separations currently experienced by Aboriginal peoples. Further, some mental health problems such as depression and anxiety may be caused by racism, dispossession, disadvantage and oppression.^{9–11}

The few studies that have described the mental health of Aboriginal children have been problem focused, with the emphasis on determining the prevalence and cause of mental health difficulties. This persistent focus on the negative is arguably stigmatising¹² for the Aboriginal community and has generated little knowledge about the factors associated with good mental health among Aboriginal young people. Identifying the factors associated with good mental health among Aboriginal children and adolescents may provide powerful tools to inform health-promoting policies and programmes. Further, existing research about mental health has rarely included a broad range of explanatory variables and no studies to date have included assessment of the mental health of carers, a factor that has been found in non-Aboriginal populations to be of critical importance.¹³

The current study takes a strengths-based approach to describing the mental health of Aboriginal children and adolescents living in urban communities and attending Aboriginal Community Controlled Health Services (ACCHS) in New South Wales, Australia. ACCHS provide comprehensive primary healthcare to Aboriginal people in a culturally appropriate manner.¹⁴ The children participated in phase I of the Study of Environment on Aboriginal Resilience and Child Health (SEARCH), the largest cohort study of urban Aboriginal children ever conducted.¹⁵ Specifically, we aim to describe:

1. The proportion of children aged 4–17 years in the SEARCH cohort with good mental health, as defined by the Strengths and Difficulties Questionnaire (SDQ), by sex and age group;
2. The association between 'good' mental health (not high risk) and a range of demographic, health and family factors.

METHODS

Sample

The protocol for SEARCH study has been published previously.¹⁵ The aim of SEARCH is to describe and investigate the causes of health and illness in urban Aboriginal children. It is aimed at Aboriginal children aged 0–17 years who attend a participating ACCHS, and their parent/caregivers. SEARCH focuses on the Aboriginal community-identified health priorities of injury, otitis media, vaccine-preventable conditions, mental health problems, developmental delay, obesity and risk factors for chronic disease.

Children in the target population were eligible to participate in the phase I survey, provided their parent/caregivers were aged 16 years or over and were willing to provide contact information for follow-up interviews. SEARCH is conducted in partnership with four ACCHS, all of which are located in urban and large regional centres in New South Wales: Mount Druitt (Aboriginal Medical Service Western Sydney), Campbelltown (Tharawal Aboriginal Corporation), Wagga Wagga (Riverina Medical and Dental Aboriginal Corporation) and Newcastle (Awabakal Aboriginal Cooperative).

Consent and permissions

Families meeting inclusion criteria are invited to participate in SEARCH at the time of presentation at a participating ACCHS by an Aboriginal research assistant. Parents/caregivers are provided with a Participant Information Sheet by a data collector and talked through its contents. At this time, willing parents/caregivers sign a written consent form to participate in the study and to permit future follow-up through additional data collection and data linkage, on behalf of themselves and their children. Adolescents aged 12–17 are given their own Participant Information Sheet and also sign their own consent form. SEARCH is a partnership between researchers, ACCHS and the Aboriginal Health and Medical Research Council (AH&MRC—the peak body for ACCHS in New South Wales). Phase I data collection for SEARCH took place from 2006 to 2012. Participants in SEARCH will be followed up 5 years after recruitment; this article reports on the baseline cross-sectional data collected in phase I.

The study sample is made up of the children aged 4–17 years for whom a carer completed a survey about their health and well-being as part of phase I SEARCH.

Measures

As part of phase I SEARCH, the parents or carers of participating children aged 4–17 years completed the standard Australian SDQ about their child by interview with an Aboriginal research assistant. A total difficulties score ranging from 0 to 40 was derived by summing all subscales excluding prosocial behaviours.¹⁶ Total difficulties scores are considered to provide an indicator of level of risk for emotional or behavioural problems. For the parent report version of the SDQ used in the current

study, the new four-band classification system for total difficulties scores is as follows: 0–13 ‘close to average’, 14–16 ‘slightly raised’, 17–19 ‘high’ and above 19 ‘very high’.¹⁷ For the purposes of analysis, we considered that all children with a total difficulties score below the threshold for high risk of emotional or behavioural problems (<17) had ‘good’ mental health.^{18–20} The SDQ has previously been found to be acceptable,²¹ reliable and valid²² among the SEARCH cohort.

Carers completed a comprehensive survey about their children aged 4–17 years outlining their physical health, nutritional intake, exercise habits and development. Carers also completed a questionnaire about themselves covering a range of demographic, social, lifestyle and health-related factors, including health service use, community and family resilience and quality and safety of housing. Questionnaire content is based on the Western Australian Aboriginal Child Health Survey⁴ and the New South Wales Child Health Survey,¹¹ where possible.

The Kessler-10 (K10) scale was used to measure psychological distress in carers.²³ A score of 22 or higher was used to indicate high levels of psychological distress consistent with previous literature.²⁴ The Kessler-10 has been found to be valid for Aboriginal adults in New South Wales.²⁵

Statistical analysis

Analysis was restricted to children aged between 4 and 17 years (inclusive). Characteristics of the sample are presented as means and SDs or frequencies and percentages, and distributions were compared between males and females using the Student’s *t*-test for continuous measures and the χ^2 test for categorical variables. The percentage of children with good mental health was calculated with 95% CI by gender and age group. The associations between good mental health and demographic, physical health and family/carer factors were examined. Initially each variable of interest was included in a separate model controlling for age, sex, ACCHS, carer’s employment status (as a measure of socioeconomic status) and clustering by family ID. All variables with a *p* value of <0.20 or which were considered clinically important in these analyses were then included in a multiple regression model, with a separate model for each of the domains of explanatory variables of interest. A final model was then generated, which included all of the variables from these three models with *p* value <0.20 or which were considered clinically important. As the factors associated with good mental health may vary with the age of the child or adolescent, we undertook analyses separately for three age groups: 4–7 years (early childhood), 8–11 years (middle childhood) and 12–17 years (adolescence). For all models, logistic regression was undertaken within the generalised estimating equations framework to account for the correlations within a family.

We undertook multiple imputation (MI) of predictor variables to assess the sensitivity of results to missing data using the chained regression method of MI to generate

five imputed data sets. Missing values were predicted using an iterative series of appropriate regression models (logistic or multinomial) conditional on the observed values of the outcome variable, independent variables used in regression modelling and additional measured variables. This method is appropriate for arbitrary patterns of missing data but assumes the data are missing at random. Modelling was performed using the pooled MI data set, including the independent variables selected from the complete-case analysis (final model). Coefficients and SEs for the variability between imputations were combined using the method of Rubin.²⁶

With an overall sample size of 1005 children and an estimated intraclass correlation of 0.24 for the outcome of good SDQ score, the effective sample size of ~800 children would provide 80% power, with a 5% significance level, to detect differences of at least 12% between the categories (and an outcome prevalence of at least 75%) of study factors associated with a ‘good’ SDQ score.

All analyses were programmed in SAS V.9.4 and Stata V.13.

RESULTS

There were 1005 individuals aged 4–17 years from 513 families who participated in phase I SEARCH, with 949 participants completing the SDQ. Children being raised by a foster carer (14%) were more likely than those being raised by a parent (5%) or other relative (4%) not to have an SDQ score (*p*=0.01). The results for analyses using imputed missing values were largely similar to those obtained with complete-case analysis; thus, results of complete-case analyses are presented.

The majority of SEARCH participants aged 4–17 years (84%) were being raised by a biological parent (table 1). Over half (55%) of carers reported their current employment to be engagement in home duties and a similar percentage (53%) had a qualification, with a certificate from college being the most common. The mean SDQ score was 12.3 (SD=7.3) (see online supplementary additional file 1 for a graph of the distribution of total difficulties scores). Most (72%) SEARCH participants had good mental health (ie, were not at high risk for emotional or behavioural problems according to the SDQ). Females were consistently more likely than males to have good mental health from early childhood to late adolescence (77% vs 68%, table 2).

The association between good mental health and all significant variables from each category (demographics, child and carer health factors)

The relative contributions of significant demographic, child and carer health factors after adjusting for all other factors in the model are presented in table 3. Results are displayed for the entire cohort aged 4–17 years combined and for the age groups 4–7 years (early childhood), 8–11 years (middle childhood) and 12–17 years (adolescence) separately. The pattern of

Table 1 Characteristics of children aged 4–17 years participating in phase I of the SEARCH programme*

Variable	Class	Male N=532 (53%)	Female N=473 (47%)	Total N=1005 (%)
Child's age (in years)	Mean (SD)	9 (3)	9 (4)	9 (3)
Carer's age (in years)	Mean (SD)	36.1 (8.7)	35.8 (8.6)	36.0 (8.7)
Carer's gender	Male	52 (10)	34 (7.4)	86 (8.9)
	Female	462 (90)	423 (93)	885 (91)
Carer's relationship to child	Parent	437 (83)	399 (85)	836 (84)
	Other relative	53 (10)	28 (5.9)	81 (8.1)
	Foster/other	37 (7.0)	44 (9.3)	81 (8.1)
Carer's employment status	Employed	140 (28)	126 (28)	266 (28)
	Studying	24 (4.8)	12 (2.7)	36 (3.8)
	Home duties	272 (54)	253 (57)	525 (55)
	Retired	7 (1.4)	1 (0.2)	8 (0.8)
	Unable to work	20 (4.0)	28 (6.3)	48 (5.1)
	Unemployed	39 (7.8)	25 (5.6)	64 (6.8)
Carer's qualifications	None	249 (51)	209 (49)	458 (50)
	Trade/certificate/diploma/other	202 (41)	192 (45)	394 (43)
	Bachelor/postgraduate	36 (7.4)	28 (6.5)	64 (7.0)
Number of homes previously lived in	<4	291 (62)	272 (65)	563 (63)
	4 or more	182 (38)	145 (35)	327 (37)

*Numbers may not add up to the total sample size due to missing data. SEARCH, Study of Environment on Aboriginal Resilience and Child Health.

results across the four models is broadly consistent although there are differences in significance across age groups, potentially due to lower power for the smaller subgroup samples. In addition, there are some factors that appear to be particularly important for mental health in Aboriginal adolescents.

There is a trend towards females having higher odds of good mental health across all age groups; however, this association is only statistically significant for adolescents, with females aged 12–17 years having more than four times higher odds of good mental health than males (OR=4.4, 95% CI 1.7 to 11.5). For the entire cohort, children being raised by a foster carer compared with a biological parent had significantly poorer odds of good mental health (OR=0.28, 95% CI 0.11 to 0.71). This relationship was statistically significant in the adolescent model (OR=0.01, 95% CI 0.00 to 0.18) but not in the early and middle childhood models.

Across all models, there was a trend towards children with carers who worked or studied having better mental health than those whose carers were unemployed or engaged in full-time home duties. This relationship only reached significance for children aged 8–11 years whose carers were engaged in full-time home duties compared with working or studying (OR=0.36, 95% CI 0.15 to 0.86). Having lived in more than four homes since birth was significantly associated with lower odds of good mental health in the entire cohort (OR=0.62, 95% CI 0.39 to 1.00) and for children aged 4–7 years (OR=0.39, 95% CI 0.18 to 0.85).

The only child health problem that retained a significant association with mental health across the cohort in the final model was experiencing recurring infections. A significant relationship between not experiencing recurrent infections and good mental health was noted across the cohort (OR=2.8, 95% CI 1.8 to 4.3), in early

Table 2 The proportion of SEARCH participants meeting SDQ for normal and high risk of mental health problems by age and gender*

Age group (years)	Gender	Frequencies (%)			Subgroup total
		Low SDQ, <17	High SDQ, ≥17	Total (N=949)	
4–7	Male	156 (70)	66 (30)	222	413
	Female	147 (77)	44 (23)	191	
8–11	Male	113 (65)	60 (35)	173	331
	Female	116 (73)	42 (27)	158	
12–17	Male	69 (68)	32 (32)	101	205
	Female	85 (82)	19 (18)	104	

*SDQ total difficulties scores of 17 or more indicate high risk of emotional or behavioural problems. SDQ, Strengths and Difficulties Questionnaire; SEARCH, Study of Environment on Aboriginal Resilience and Child Health.

Table 3 The relationship between good mental health (as measured by the SDQ) and significant demographic, child health and carer health factors for children aged 4–17 years who participated in phase I of the SEARCH programme‡

Variable	OR adjusted for age, sex, ACCHS, employment and all other factors in the model (95% CI)			
	All 4–17 years	4–7 years	8–11 years	12–17 years
Sex				
Male	1	1	1	1
Female	1.5 (0.99 to 2.3)	1.2 (0.57 to 2.3)	1.4 (0.72 to 2.7)	4.4 (1.7 to 11.5)*
Carer relationship to child				
Parent	1	1	1	1
Other relative	0.96 (0.43 to 2.1)	1.5 (0.34 to 6.4)	0.45 (0.14 to 1.4)	2.3 (0.17 to 31.0)
Foster/other	0.28 (0.11 to 0.71)*	0.37 (0.06 to 2.1)	0.33 (0.09 to 1.3)	0.01 (0.00 to 0.18)*
Carer employment status				
Employed/studying	1	1	1	1
Unemployed/retired/unable to work	0.82 (0.44 to 1.5)	0.37 (0.13 to 1.1)	1.7 (0.58 to 4.9)	0.97 (0.23 to 4.2)
Home duties	0.81 (0.50 to 1.3)	0.36 (0.15 to 0.86)*	0.96 (0.45 to 2.1)	6.0 (0.97 to 37.7)
Number of homes previously lived in				
<4	1	1	1	1
4 or more	0.62 (0.39 to 1.00)*	0.39 (0.18 to 0.85)*	0.61 (0.31 to 1.2)	1.9 (0.55 to 6.2)
Ever attended childcare or preschool				
No	1	1	1	1
Yes, currently attending	1.6 (0.67 to 3.6)	1.2 (0.23 to 6.2)	2.9 (0.38 to 21.4)	0.61 (0.04 to 9.9)
Yes, used to attend	1.0 (0.52 to 2.0)	0.76 (0.15 to 3.9)	1.1 (0.39 to 3.3)	2.1 (0.60 to 7.6)
Recurring chest, gastrointestinal or skin infection				
Yes	1	1	1	1
No	2.8 (1.8 to 4.3)*	3.4 (1.6 to 7.3)*	2.6 (1.2 to 5.8)*	3.3 (0.97 to 11.2)
Has had ear infection diagnosed by doctor				
Yes	1	1	1	1
No	1.3 (0.82 to 1.9)	1.6 (0.76 to 3.2)	0.78 (0.39 to 1.6)	8.0 (1.8 to 34.8)
Asthma				
Yes	1	1	1	1
No	0.95 (0.62 to 1.5)	1.2 (0.61 to 2.4)	0.80 (0.39 to 1.7)	0.27 (0.07 to 1.0)
Problems with mouth or teeth (past 12 months)				
Often	1	1	1	1
Sometimes	1.7 (0.89 to 3.1)	1.2 (0.49 to 2.9)	1.8 (0.55 to 5.8)	2.31 (0.38 to 14.2)
Servings of vegetables per day†				
None to 1	1	1	1	1
2 plus	2.1 (1.2 to 3.8)*	1.6 (0.63 to 3.9)	2.4 (1.00 to 5.8)	0.71 (0.08 to 6.29)
Servings of fruit per day				
None to 1	1	1	1	1
2 plus	0.91 (0.44 to 1.9)	1.4 (0.31 to 6.6)	0.66 (0.22 to 2.0)	1.62 (0.14 to 18.9)
Carer has chronic health condition				
Yes	1	1	1	1
No	0.65 (0.39 to 1.1)	1.7 (0.72 to 3.9)	0.27 (0.11 to 0.63)*	0.18 (0.02 to 1.36)
Functional limitations due to health				
Yes	1	1	1	1
No	1.1 (0.52 to 2.1)	0.76 (0.25 to 2.3)	1.6 (0.56 to 4.8)	2.29 (0.16 to 32.2)
Carer previous treatment for mental health				
Yes	1	1	1	1
No	1.3 (0.81 to 2.2)	1.3 (0.58 to 2.8)	2.00 (0.97 to 4.1)	0.42 (0.04 to 4.19)
Carer current high psychological distress (K10)				
Yes	1	1	1	1
No	2.8 (1.6 to 5.1)*	2.0 (0.78 to 4.9)	2.9 (1.2 to 6.8)*	7.81 (0.56 to 11.0)
Carer stressful life events in the past 12 months				
More than 2	1	1	1	1
2 or less	1.1 (0.71 to 1.7)	1.2 (0.57 to 2.3)	0.71 (0.37 to 1.4)	6.24 (1.09 to 35.8)*

*p<0.05.

†Potato not counted as a vegetable.

‡Numbers may not add up to the total due to missing data.

ACCHS, Aboriginal Community Controlled Health Services; SDQ, Strengths and Difficulties Questionnaire; SEARCH, Study of Environment on Aboriginal Resilience and Child Health.

(OR=3.4, 95% CI 1.6 to 7.3) and middle (OR=2.6, 95% CI 1.2 to 5.8) childhood.

Fruit consumption was not significantly associated with mental health; however, consuming more than two serves of vegetables a day was associated with more than twice the odds of good mental health in the entire cohort (OR=2.1, 95% CI 1.2 to 3.8) and among children aged 8–11 years (OR=2.4, 95% CI 1.00 to 5.8).

Children whose carers did not meet criteria for high psychological distress had significantly higher odds of good mental health than others in the entire cohort (OR=2.9, 95% CI 1.2 to 6.8) and in middle childhood (OR=2.9, 95% CI 1.2 to 6.8). The relationship between these variables followed the same pattern in early childhood and adolescence but did not reach significance. Adolescents had more than six times greater odds of having good mental health when their family had experienced less than two stressful life events in the last year (6.2, 95% CI 1.1 to 35.8).

DISCUSSION

The majority (almost three-quarters) of Aboriginal children aged 4–17 years who participated in phase I SEARCH were not at high risk for mental health problems. The mental health of children in the cohort was associated with aspects of their own health, their carers' well-being and their home environment with gender, living in foster care and experiencing stressful life events being particularly important for adolescents.

That around one-quarter of the cohort was at high risk for mental health problems suggests that child and adolescent mental health should be a priority area for Aboriginal health. This proportion is approximately double that of children found to be at high risk in the general New South Wales population (15%)²⁷ but similar to the proportion noted in other studies of Aboriginal children (24%,⁵ 22.5%²⁸ and among Aboriginal participants in the New South Wales Population Health Survey).²⁷ There is only one other study to date that has measured the factors associated with Aboriginal child and adolescent mental health.⁵ SEARCH makes an important, new contribution to this emerging area of research by considering, for the first time, the impact of carer psychological distress.

While there was a non-significant trend towards gender differences in mental health across the SEARCH cohort, consistent with other surveys of Aboriginal children,⁵ adolescent girls had significantly higher odds than boys of having good mental health. These findings suggest that programmes or services designed to help Aboriginal boys deal with emotional or behavioural problems should be prioritised. How best to structure these is an open question; recent findings from Rites of Passage, an early intervention programme for Aboriginal young people which includes resilience-building camps and increasing access to mental health services, suggest that boys may be more difficult than girls to engage in social and emotional

well-being programmes (Robinson R, Schuster L, Williamson A. Rites of Passage: evaluation of a pilot study of an early intervention program for Aboriginal young people. Unpublished report).

Around 16% of SEARCH children were in non-parental care as opposed to 0.01% of children in Australia overall and 0.06% of Aboriginal children nationally.³⁰ In the whole-of-cohort model, SEARCH children being raised by a parent or other relative had significantly higher odds of displaying good mental health than those under the care of unrelated foster carers. This association was also found to be significant for adolescents. In keeping with other research,³⁰ children in foster care, who make up around 8% of the cohort, were found to be a particularly vulnerable group with almost half meeting criteria for high risk of emotional or behavioural problems. These findings support efforts to place Aboriginal children with relatives where possible and suggest the need for additional supports and services for foster children and their carers. Our results suggest that the impact of living in foster care may be particularly important for adolescents, a relationship that warrants more in-depth exploration in future research. This finding is in keeping with that of Pathways of Care Longitudinal Study.³¹ Phase I of the study, which follows children placed in Out of Home Care in New South Wales, Australia, found that while children under the age of 3 in out-of-home care had levels of emotional or behaviour problems similar to other Australian children, the proportion experiencing difficulties increased steadily such that by the ages of 12–17 years less than half of participants scored in the normal range according to carer report on the Child Behavior Checklist.³²

The proportion of carers in the SEARCH cohort who classified themselves as unemployed was low (7%) compared with national unemployment rates for Aboriginal Australians (16%), likely due to the high proportion of the cohort who reported being engaged in home duties (55%).³³ The proportion of SEARCH carers with non-school qualifications was higher than national rates for Aboriginal adults (48% vs 29%),³⁴ while rates of home ownership were slightly lower (20% vs 29%).³⁵ There was no relationship between carer education or home ownership and child mental health among SEARCH participants; however, carer employment status was important. In particular, for children aged 4–7 years, those whose carers were engaged in full-time home duties, as opposed to working or studying, were less likely to meet criteria for good mental health. The relationship between carer employment and child mental health has been noted previously.³⁶ These data suggest that supporting carers of Aboriginal children who want to work or study to do so may benefit the entire family.

Having lived in more than four homes since birth was associated with lower odds of good mental health in the complete cohort and in early childhood. This finding points to the deleterious effects of frequent major change on the mental health of young people. We

would thus expect this relationship to weaken as children get older (having moved five times when you are 16 years is not the same as having moved five times before you are 6). While little research has examined the housing situation of urban Aboriginal people, qualitative research conducted in Perth, Western Australia³⁷ and in Sydney, Australia³⁸ has documented the major difficulties that many urban Aboriginal people continue to face in obtaining stable, safe housing and the stress and emotional toll that this instability places on children and adults alike.

In keeping with the holistic, Aboriginal view of social and emotional well-being, a strong relationship between the physical and mental health of Aboriginal young people was evident. Across the cohort and again for children aged 4–7 and 8–11 years, not experiencing recurrent gastrointestinal, skin or chest infections was associated with a significantly higher odds of good mental health. This association may be a result of the impact of the physical symptoms experienced on emotions and behaviours (potentially exacerbated by related absences from school and consequent falling behind with school work and feeling isolated from peers) or mental and physical health issues may arise from a common underlying cause. Stress has been linked to reduced immunity and mental health difficulties,³⁹ and there are some data that suggest infection affects mental health.⁴⁰ Either way, it appears likely that the provision of timely, culturally appropriate primary care services, such as that provided by ACCHS,¹⁴ may be an important component of promoting mental health among urban Aboriginal children.

SEARCH children who ate two or more servings of vegetables a day had significantly higher odds than others of meeting criteria for good mental health in the entire cohort and specifically among children aged 4–7 years. This association was robust, remaining significant even after adjusting for the effects of socioeconomic, child health and carer health factors. A similar relationship was noted in the Western Australian Aboriginal Child Health Survey where an independent association between the number of dietary indicators met and a child's odds of experiencing emotional or behavioural problems was demonstrated.⁵ Other research with Australian adolescents has also demonstrated an association between dietary quality and mental health, even after controlling for socioeconomic status and a range of individual and family-level characteristics.^{41 42} It appears that a more detailed exploration of the link between diet and mental health among Aboriginal children is warranted.

Whether or not carers reported a functional limitation as a result of their health was not significantly associated with child mental health in our cohort. Current levels of carer psychological distress, however, were significantly related to child mental health. Across the cohort and among children aged 8–11 years, children whose carer was not currently highly psychologically distressed had almost three times the odds of meeting criteria for good

mental health compared with children whose carer was currently highly distressed. Some research has suggested that parents who are distressed are more likely to rate their children's mental health or behaviour as problematic; however, this relationship has also been demonstrated often in studies where children's mental health is assessed by clinician interview.^{43 44} The design of the current study does not allow us to explore what underpins the relationship between child and carer health. Research suggests that psychological therapies that focus on the mother and child can substantially improve child outcomes.⁴⁵

Two-thirds of the children participating in SEARCH came from families that had experienced two or more stressful life events in the last year. This is in keeping with a cross-sectional study of Aboriginal children aged 14 or under living in Brisbane, which found more than half to have experienced a stressful life event in the last year.⁴⁶ Living in a family that had experienced less than two stressful life events in the past year was associated with six times higher odds of good mental health among adolescents but was not significant in the final models for the cohort overall or among the younger participants specifically. It is perhaps unsurprising that adolescents, who are more likely to be fully aware of the stressful events their family experiences and their repercussions on themselves and their carers, are most strongly affected by them.

Taken together, these results underscore the importance of the availability of culturally appropriate mental health services for the carers of Aboriginal children. Previous qualitative work among Aboriginal communities in New South Wales suggested that many parents felt unable to access help for their own mental health issues due to fears that their children would be removed from them as a result.⁴⁷ This was a legacy of the stolen generation and a reflection of the high rates of removal of Aboriginal children still experienced today. Aboriginal Community Controlled Health Services were highlighted as one of the only places parents felt safe to access help, yet the majority of services (87%) do not have funding for specialised mental health staff.⁸ Better resourcing more ACCHS to provide mental health services for adults may be a key means of improving the mental health of future generations of Aboriginal children. Ensuring that carers have the opportunity to access mental health services as needed also offers the opportunity for carers to model help seeking and self-care behaviours for their children. This may positively affect the likelihood that young people will access mental health services themselves in the event they are needed.

This article is designed to provide an overview of the associations between a range of demographic, physical and family factors and Aboriginal child mental health. The following caveats should be noted. The current study uses carer report data that may be less accurate than physical examination for some variables (eg, oral health). The data reported are cross-sectional. Thus, we report on associations but are unable to infer the cause

of the relationships noted. While SEARCH is largest cohort of urban Aboriginal children ever assembled, like many cohort studies, it does not provide a representative sample. This does not lessen its appropriateness for research based on internal comparisons within the cohort or longitudinal analyses.⁴⁸ Phase II SEARCH data are currently being collected and will allow us to explore mental health trajectories. It should be noted that the current study explores just a subsection of the many factors that may affect the mental health of Aboriginal children and adolescents and that there may be factors underlying the associations noted in the article that we were unable to account for. All data presented pertain to Aboriginal children and families recruited through four Aboriginal Community Controlled Health Services in urban areas of New South Wales, and it is unclear how generalisable these results are to Aboriginal children living in other parts of Australia.

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