

The equitable reach of a universal, multisector childhood obesity prevention program (Live Life Well @ School) in Australian primary schools

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Key points

- State-wide implementation of the Live Life Well @ School (LLW@S) program in New South Wales, Australia, has enhanced health promotion initiatives in the school setting over time
- LLW@S monitoring data demonstrate high reach to schools with disadvantaged populations, in remote areas and with a high proportion of Aboriginal students
- A dedicated implementation workforce has been continually funded since 2011, allowing local health promotion staff to target schools and tailor LLW@S strategies to the local context, to support achievement of the desirable practices

Abstract

Objective: The Live Life Well @ School program aims to establish, reinforce and support primary school students (aged 5–11 years) and their families to adopt healthy eating and physical activity behaviours through the implementation of an evidence-based program that focuses on the school curriculum, the school food and physical activity environment, and teacher professional development. This paper examines Live Life Well @ School monitoring data to provide practical insights into program adoption and changes in primary school environments across NSW, particularly in schools characterised as disadvantaged.

Type of program: The Live Life Well @ School program provides a universally delivered, state-wide approach to childhood obesity prevention in the primary school setting. The program is a joint initiative between health and education sector agencies.

Methods: The program includes health promotion strategies for primary schools relating to physical activity and nutrition. Adoption of the program is indicated by achievement of evidence-based desirable practices, which are monitored routinely by local health promotion staff using a purpose-built online Population Health Information Management System. Monitoring data are used to provide feedback to schools and identify a staged approach to achieving more desirable practices. Health promotion staff tailor support locally to suit school and community needs, and have additional funding to support socio-economically disadvantaged schools.

Results: The program has achieved high reach to schools (82.7% of the 2570 schools in New South Wales, Australia). Adoption of desirable practices within schools participating in 2017 was 72.9%. Equitable reach

was achieved for schools in areas of socio-economic disadvantage, schools in remote areas and schools with a high proportion of Aboriginal students, who are likely to have higher rates of childhood overweight and obesity. Curriculum-based strategies were more frequently adopted; environmental changes and teacher professional development components were less well adopted.

Lessons learnt: The desirable practice approach allows health promotion officers to tailor support by building on school strengths and taking a staged approach to change. Ongoing monitoring of the program provides useful insights that inform quality improvements to the program and implementation process, as well as information on progress towards outcomes. State-wide program targets were adjusted to strengthen impact and focus on desirable practices that were less well achieved. Intentional targeting and tailoring in areas of disadvantage are required to achieve equitable adoption of such a universal health promotion program. Strong relationships at the local level between school champions (teachers and principals) and health promotion staff characterise success.

Introduction

Childhood obesity is a global public health issue, which has profound health, economic and social impacts.¹ In Australia, approximately one-quarter of school children (aged 5–17 years) are overweight or obese.² In the state of New South Wales (NSW), Australia, the proportion of school children who are overweight or obese is 24.7%.³ The proportion of school children who are overweight or obese is significantly higher in children from low socio-economic areas (35%).⁴

Population-level, long-term interventions in the school setting that encourage healthy eating and increased physical activity can reduce the prevalence of childhood obesity.¹ The World Health Organization recommends whole-of-school programs that include healthy eating and physical activity in the school curriculum, vegetable and fruit breaks, quality physical education (including development of fundamental movement skills), availability of adequate facilities, and support for school teachers and staff to implement health promotion initiatives with all children.¹ It is important to ensure that such interventions can also be delivered and adopted by schools in disadvantaged communities to address health inequities.

The NSW Government is implementing a suite of universal health promotion programs in different settings to reduce childhood overweight and obesity by 5% by 2025.⁵ The primary school-based program is known as Live Life Well @ School (LLW@S). This paper examines LLW@S monitoring data to provide practical insights into LLW@S adoption and changes in primary school environments across NSW, particularly in schools characterised as disadvantaged.

Live Life Well @ School

LLW@S is a joint initiative between NSW Government agencies – the Ministry of Health and Department of Education – and the Catholic and independent (private) school sectors, implemented state-wide since 2011. LLW@S focuses on the school curriculum, the school food and physical activity environment, and teacher professional development to influence the food and physical activity behaviours of primary school children (5–11 years old).

The program's health promotion messages align with the Australian national guidelines for nutrition and physical activity.^{6,7} The program promotes whole-of-school physical activity and nutrition initiatives that are consistent with the World Health Organization's Health Promoting Schools Framework.^{1,8} Key components of the program include:

- A guiding framework of measurable 'desirable practices', developed in consultation with the education sector, and from previous research⁹ (Table 1)
- Free accredited professional development for teachers, delivered face to face and online
- A health promotion workforce to recruit, develop school relationships, and support the school to implement a LLW@S Action Plan through site visits, phone calls and emails
- Funding for schools to develop and implement their LLW@S Action Plan (available between 2011 and 2014), and to support teacher attendance at training
- Access to free nutrition and physical activity programs and resources.

Table 1. Live Life Well @ School (LLW@S) program desirable practices

Curriculum		Food and physical activity environment	Professional development, monitoring and reporting
1. The school provides curriculum learning experiences regarding healthy eating, physical activity and sedentary behaviour	2. The school explicitly addresses fundamental movement skill development as part of the NSW Personal Development, Health and Physical Education K-6 Syllabus	3. The school provides the opportunity for classes to eat vegetables and fruit, and drink water	4. The school encourages physical activity during recess and/or lunch
		5. The school provides a supportive environment for healthy eating (canteens, school activities involving food and drink)	6. The school provides information to families on healthy eating, healthy lunchboxes, physical activity and limiting small screen recreation
			7. Teaching staff are provided with professional learning/development to promote healthy eating and physical activity to students
			8. The school has an identified team/committee with executive membership to support the implementation of LLW@S or similar initiatives
			9. School planning processes (e.g. strategic, annual operations plans) incorporate LLW@S strategies
			10. The school monitors and reports annually on the implementation and outcomes of LLW@S strategies

To monitor program implementation, health promotion staff routinely gather data during their contact with the schools to provide support and advice on program implementation. Data is collected on the number of LLW@S trained schools and number of desirable practices achieved by schools according to defined protocols, and stored in a purpose-built online database, the Population Health Intervention Management System.¹⁰ The data are also used to provide schools with feedback, tailor support to achieve LLW@S desirable practices and inform quality improvements to LLW@S.⁵

Program reach

To ensure equity of program uptake and reduce the risk of widening the health differential for NSW children, program reach is monitored by indicators of disadvantage, specifically schools located in geographically remote and socio-economically disadvantaged areas, or with high Aboriginal populations. These schools are offered support and resources tailored to meet their needs to engage in the program. For example, health promotion staff provide schools that have a high number of students from culturally and linguistically diverse backgrounds with translated written resources. Since the program's inception in 2011 to June 2017, schools located in disadvantaged areas ($n = 1121$; 85.8%), in geographically remote areas ($n = 46$; 86.8%) and with at least 10% of students from Aboriginal backgrounds ($n = 643$; 85.8%) have received proportionately more LLW@S training than all NSW primary schools ($n = 2126$; 82.7%).

Program adoption

Program adoption is indicated by the proportion of the 10 desirable practices achieved by a school (Table 2). Between 2012 and June 2016, the NSW Ministry of Health deemed that a school was considered to have adopted the program when it was achieving 70% or more (seven or more) desirable practices. In June 2016, 79% of all participating schools were adopting the program. Thereafter, the target rate for program adoption was revised by 10% to extend health promotion action to LLW@S desirable practices that were less well adopted. By the end of June 2017, 72.9% of participating schools in NSW had reached the new 80% target of achieved desirable practices, increasing impact in the setting.

Table 2. Adoption of Live Life Well @ School program by trained schools between 2013 and 2017 by Aboriginal status, socio-economic status and remoteness

Type of school	2013		2014		2015		2016		2017	
	Trained schools ^a <i>n</i>	Achieving 70% desirable practices <i>n</i> (%)	Trained schools <i>n</i>	Achieving 70% desirable practices <i>n</i> (%)	Trained schools <i>n</i>	Achieving 70% desirable practices <i>n</i> (%)	Trained schools <i>n</i>	Achieving 70% desirable practices <i>n</i> (%)	Trained schools <i>n</i>	Achieving 80% ^e desirable practices <i>n</i> (%)
High % of Aboriginal students ^b	613	142 (23.2)	613	236 (38.5)	632	452 (71.5)	616	476 (77.3)	609	432 (70.9)
Disadvantaged area ^c	1091	228 (20.9)	1091	421 (38.6)	1126	790 (70.2)	1089	850 (78.1)	1076	769 (71.5)
Remote area ^d	43	5 (11.6)	43	18 (41.9)	46	28 (60.9)	44	28 (63.6)	43	28 (65.1)
Total in NSW	1637	435 (21.0)	2073	819 (39.5)	2122	1516 (71.4)	2076	1639 (79.0)	2051	1495 (72.9)

^a All schools that attended training, less schools that opted out of the program

^b Schools with 10% or more students from Aboriginal background, reported by the Australian Curriculum, Assessment and Reporting Authority

^c Schools located in the two most disadvantaged quintiles, as measured by the Socio-economic Indexes for Areas¹³

^d Schools located in remote and very remote areas, as measured by remoteness classifications¹⁴

^e Target was increased by 10% or one practice to extend health promotion impacts.

Equitable LLW@S practice achievement

Across all schools, desirable practices 1–4 were well achieved, especially in remotely located schools (Table 3). The high level of achievement of desirable practices addressing curricular activities (1 and 2) may be partially due to their association with the mandatory NSW school curriculum requirements.

Desirable practices addressing the food and physical activity environment (3–6) were successful when supported by specific government programs. Desirable practice 3 (opportunity for students to eat vegetables and fruit, and drink water) was supported by the Crunch&Sip® program, which provides designated class time for students to eat fruit and vegetables, and drink water.¹¹ Achievement of desirable practice 4 (physical activity during recess and/or lunch) is likely to be related to the provision of recreation space during class breaks and programs such as the NSW Premier's Sporting Schools – Sporting Schools Challenge, which provides school grants for physical activity equipment.¹² Health promotion staff encourage schools to participate in complementary

programs and may provide additional support in disadvantaged areas to implement Crunch&Sip, including supplying free fruit and vegetables. Alternatively, schools may support student-led programs to encourage physical activity during recess and lunch, which meet both the school educational student leadership objectives and LLW@S desirable practices concurrently.

The proportion of all primary schools achieving desirable practice 5 (providing a supportive environment for healthy eating – canteens, school activities involving food and drink) was much lower than for other desirable practices. Provision of such a supportive food environment is complex and continues to be a key priority. The NSW Government's NSW Healthy Canteen Strategy, launched in 2018, outlines the type and proportion of food and drinks suitable for sale in NSW school canteens. Local health promotion staff support schools to implement the NSW Healthy Canteen Strategy and tailor the food environment for healthy eating, often in partnership with licensed canteen operators. Progress towards improving the food environment in the school requires sustained support and perhaps could be further investigated in the small proportion of schools that have achieved desirable practice.⁵

Table 3. Desirable practices achieved by trained schools in June 2017, by Aboriginal status, socio-economic status and remoteness

Practice	Trained schools in NSW (<i>n</i> = 2033 ^a)		Trained schools with high % of Aboriginal students ^b (<i>n</i> = 604)		Trained schools in disadvantaged areas ^c (<i>n</i> = 1069)		Trained schools in remote areas ^d (<i>n</i> = 43)	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
1. Curriculum learning experiences	1756	86.4	522	86.4	938	87.8	39	90.7
2. Fundamental movement skills	1779	87.5	515	85.3	942	88.1	39	90.7
3. Healthy food opportunities	1788	88.0	541	89.6	965	90.3	42	97.7
4. Lunchtime physical activity	1843	90.7	546	90.4	979	91.6	43	100
5. Food environment	929	45.7	264	43.7	470	44.0	21	48.8
6. Parent involvement	1622	79.8	482	79.8	852	79.7	26	60.5
7. Teacher development	1555	76.5	466	77.2	823	77.0	32	74.4
8. Executive support	1650	81.2	465	76.99	857	80.2	36	83.7
9. Strategic planning	1537	75.6	453	75.0	781	73.1	18	41.9
10. Monitoring and reporting	1528	75.2	427	70.7	804	75.2	30	69.8

^a All schools that attended training, less schools that opted out of the program, less schools whose practice achievement data was not collected during scheduled reporting period

^b Schools with 10% or more students from Aboriginal background, reported by the Australian Curriculum, Assessment and Reporting Authority

^c Schools located in the two most disadvantaged quintiles, as measured by the Socio-economic Indexes for Areas¹³

^d Schools located in remote and very remote areas, as measured by remoteness classifications¹⁴

The remaining desirable practice relating to the food and physical activity environment (desirable practice 6: providing information to families on healthy eating, healthy lunchboxes, physical activity and limiting screen time) had lower achievement (60.5%) in geographically remote schools, although these schools achieved the highest proportion of desirable practices 1–4. Schools in geographically remote areas may frequently use face-to-face contact with families rather than distributing information sheets and newsletters, which makes achieving this practice difficult in remote areas.

Desirable practices 7, 9 and 10, regarding professional development, planning, monitoring and reporting, were less well achieved than the other desirable practices in all schools, and particularly in remote areas. This may be due to the tyranny of distance, including lack of transport, and lack of a supplementary budget for relief staff to enable teachers to attend professional development courses. Achievement of desirable practice 8 (an identified team or committee to support LLW@S implementation) indicates that staff are interested in planning actions in the school that align with LLW@S; more needs to be understood about the barriers that limit the implementation of action plans.

Limitations

The data include only schools that have participated in LLW@S training because data are not available for schools not participating. Data on program adoption was collected by multiple health promotion staff who also were responsible for providing support to schools to implement the program. The study reports on participating schools as a whole and does not differentiate between government and nongovernment schools. This presents an opportunity for further research that reports on the differential impact of LLW@S based on type of school.

Conclusions

Collaboration between the health and education sectors is essential to promote healthy lifestyles in school settings. The comprehensive, universally delivered LLW@S program achieves high reach and adoption in primary schools across NSW, which should inform international practice for whole-of-school approaches to addressing childhood obesity. This approach is feasible and acceptable for influencing school environments to promote healthy lifestyles, and does not contribute to widening the health differential for children.

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Peer review and provenance

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Competing interests

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Author contributions

AB and BCF were responsible for drafting, analysis of the data and editing the manuscript. CI-H, BO, BM and CR were responsible for providing analytical advice, and reviewing and editing the manuscript.

References

1. World Health Organisation. Report of the commission on ending childhood obesity. Geneva; 2016 [cited 2020 Feb 11]. Available from: apps.who.int/iris/bitstream/handle/10665/204176/9789241510066_eng.pdf;jsessionid=A30A63697C2323C28D62B86DDCD9BC70?sequence=1
2. Australian Bureau of Statistics. Australian national health survey: first results, 2014–15. Canberra: ABS; 2015 [cited 2018 May 14]. Available from: www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4364.0.55.0012014-15?OpenDocument
3. Centre for Epidemiology and Evidence, NSW Ministry of Health. NSW Population Health Survey (SAPHaRI). Sydney: NSW Ministry of Health; 2018 [cited 2018 Dec 11]. Available from: www.healthstats.nsw.gov.au/Indicator/beh_bmikid_cat
4. Hardy L, Mhrshahi S, Drayton BA, Bauman A. NSW school physical activity and nutrition survey (SPANS) 2015: full report. Sydney: NSW Department of Health; 2016 [cited 2020 Feb 11]. Available from: www.health.nsw.gov.au/health/Publications/spans-2015-full-report.PDF
5. Innes-Hughes C, Rissel C, Thomas M, Wolfenden L. Reflections on the New South Wales healthy children initiative: population level impacts of a comprehensive state-delivered childhood obesity initiative. *Public Health Res Pract.* 2019;29(1):e2911908.
6. National Health and Medical Research Council. Australian dietary guidelines. Canberra: Commonwealth of Australia; 2013 [cited 2018 May 14]. Available from: www.nhmrc.gov.au/guidelines-publications/n55
7. Australian Government Department of Health. Australia's physical activity and sedentary behaviour guidelines. Canberra: Commonwealth of Australia; 2017 [cited 2018 May 14]. Available from: www.health.gov.au/internet/main/publishing.nsf/content/health-pubhlth-strateg-phys-act-guidelines

8. Langford R, Bonell C, Jones H, Campbell R. Obesity prevention and the health promoting schools framework: essential components and barriers to success. *Int J Behav Nutr Phys Act.* 2015;12(1):15.
9. Wiggers J, Wolfenden L, Campbell E, Gillham K, Bell C, Sutherland R, et al. Good for kids, good for life 2006–2010: evaluation report. Sydney: NSW Ministry of Health; 2013 [cited 2020 Feb 11]. Available from: www.health.nsw.gov.au/research/Publications/good-for-kids.pdf
10. Conte KP, Groen S, Loblay V, Green A, Milat A, Persson L, et al. Dynamics behind the scale up of evidence-based obesity prevention: protocol for a multi-site case study of an electronic implementation monitoring system in health promotion practice. *Implement Sci.* 2017;12(1):146.
11. NSW Health. Crunch&Sip. Sydney: Health Kids [cited 2018 Dec 21]. Available from: www.healthykids.nsw.gov.au/campaigns-programs/crunchsip.aspx
12. NSW Department of Education. NSW premier's sporting challenge. Sydney: NSW Government [cited 2018 Dec 21]. Available from: app.education.nsw.gov.au/sport/psc
13. Australian Bureau of Statistics. Information paper: an introduction to socio-economic indexes for areas (SEIFA). Canberra: ABS; 2006 [cited 2018 May 14]. Available from: www.abs.gov.au/ausstats/abs@.nsf/mf/2039.0/
14. Australian Bureau of Statistics. Australian standard geographical classification (ASGC) – 2006, Jul 2006. Canberra: ABS; 2006 [cited 2018 May 14]. Available from: www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/1AE106C101420508CA2571A900170741?opendocument

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