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Article

Education setting-based health promotion in New Zealand: evaluating the wellbeing and vitality in education (WAVE) programme

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Summary

Wellbeing and vitality in education (WAVE) is an education setting based health promotion initiative in South Canterbury, New Zealand. A mixed method approach was used for assessing change over time. Over ninety percent of education settings (94%) were participating in WAVE ($n = 95$). A total of 73 education settings completed the questionnaire at both baseline and follow-up. Evaluation of the WAVE programme shows that a robust partnership between health and education sectors can provide the basis for high levels of participation and significant changes in practice across all levels of education and a whole province. Evaluation results included that professional development for staff in some health related topics had improved. There was evidence of increasing partnerships between schools and community. Teachers had become role models for health messages and students had taken on leadership roles. Although the approach was based on health promoting schools literature, early engagement with education settings allowed the development of a local programme and branding. The overall outcome of WAVE has been a culture change in South Canterbury, where promoting the health of students, staff and families is becoming part of normal business for education settings. The results provide reason for optimism regarding the careful use of a health promoting schools framework, working in partnership with a range of stakeholders towards improving the health and subsequent life chances of young people.

Key words: health promoting schools, evaluation

INTRODUCTION

WAVE (wellbeing and vitality in education) is an education setting-based health promotion programme in South Canterbury, New Zealand, which began in 2007. Education settings (ES) refers to early childhood education centres, primary schools, secondary schools and tertiary providers. WAVE is based on the health promoting schools (HPS) (Booth and Samdal, 1997) model that grew out of the thinking behind the Ottawa charter for health promotion. HPS encourages a focus on the comprehensive promotion of health in schools, recognizing the opportunity to improve health through the education setting (Simovska and McNamara, 2015). In New Zealand, HPS was first piloted in Northland in 1997. By 2009, 67% of schools were participating in HPS supported by advisors from Public Health Units (PHUs) or local government (New Zealand Ministry of Health, 2013). However, the implementation of HPS in New

Zealand has been disjointed, with schools lacking a clear understanding of the HPS concept (Cushman and Clelland, 2012). WAVE was developed to support effective and comprehensive health promotion in South Canterbury ES. This paper reports on findings from the process evaluation carried out during WAVE's first 5 years of implementation and the findings from the impact evaluation, which reports on baseline (2007) and follow up data collected 24 months later. It also describes the context of the implementation of the WAVE programme.

BACKGROUND

South Canterbury is home to around 55 000 people, with one of the oldest, most European and most rural populations in New Zealand. It includes the town of Timaru, with a population of around 27 000. The province has 37 early childhood education centres (ECECs), 40 primary schools, 10 secondary schools and 8 tertiary/alternative ES, including one Polytechnic, with approximately 16 000 students in total.

HPS initiatives began in South Canterbury in the early 2000 s, delivered by public health nurses whose main role was to coordinate provision of personal health support. A small number of schools were involved. In response to declining rolls and surplus capacity in 2004 the then Minister of Education announced a new school network for South Canterbury which involved a number of amalgamations and closures. In 2006 Community and Public Health (CPH), the Public Health Unit for the South Canterbury District Health Board (SCDHB), reviewed health promotion priorities and in light of health need and government health priorities (Ministry of Health, 2001; AHRG, 2003; Parnell *et al.*, 2003) re-committed to a HPS approach with significant extra funding from SCDHB. With the introduction of WAVE in 2007, resources (including WAVE facilitators) became available to support settings across all three spheres of HPS: (1) curriculum, teaching and learning; (2) school organization, ethos and environment and (3) partnerships and services (IUHPE, 2000). All ES in South Canterbury were invited to participate in WAVE.

The original literature review, of child and youth health promotion interventions, for WAVE supported the HPS approach (Begg, 2006) and the evidence has strengthened since that time. There is strong evidence that health promotion in schools can improve children's health (Stewart-Brown, 2006). Healthy students learn better; the core business of a school is maximizing learning outcomes, and schools that promote health make a major contribution to schools achieving their educational and social goals (IUHPE, 2009). Working in educational environments enables health promotion programmes to reach almost all children across all socio-economic groups, to promote healthy behaviours (Booth and Samdal, 1997). School based health promotion has been shown to be effective in diverse areas of health (Aked *et al.*, 2010), reducing smoking uptake in young people (Thomas *et al.*, 2013), improving nutrition and physical activity and reducing overweight (Waters *et al.*, 2011; Dobbins *et al.*, 2013; Bleich *et al.*, 2013; Wang and Stewart, 2013), promoting mental health and reducing depression, violence and substance abuse (Foxcroft and Tsertsvadze, 2011; O'Neill *et al.*, 2011; Weare and Nind, 2011; Kellam *et al.*, 2014) and reducing risk-taking behaviours in sexual health (Underhill *et al.*, 2008; Shepherd *et al.*, 2010). Progress has also been made in ensuring better sun protection practices in schools, largely by the Cancer Society's SunSmart national programme in Australia and New Zealand (Schofield *et al.*, 1997; Giles-Corti *et al.*, 2004; Jopson and Reeder, 2006).

There is now strong evidence of the characteristics consistently identified with successful health promotion programmes in schools. At the governance level, leadership by the principal and governors creates a whole school ethos and culture where all aspects of the programme are supported and carried through to teachers, students and administrators (Dadaczynski and Paulus, 2015). A positive school culture that engages students and promotes identity (whether or not a specific health promotion programme is in place) has consistently been shown to be associated with positive health behaviours, increased achievement and a reduction in problem behaviours such as drug use and delinquency in the teenage years (Fletcher *et al.*, 2008; Tobler *et al.*, 2011; Jensen and Lleras-Muney, 2012). Weare and Nind (2011) and Wang and Stewart (2013) have outlined further characteristics that are shared by successful programmes, including school policies and procedures that place a high priority on healthy behaviours and increase collaboration among students, teachers and other school staff. Programmes need to be integrated into the curriculum so that they assist the core learning goals of the school and are not seen by teachers as an additional burden competing for time, resources and academic achievement (Lynagh *et al.*, 1999; Mukoma and Fisher, 2004). A range of interactive teaching methods should be used and the programme must be well resourced and continue long enough to make a lasting impact. Ideally, it should be reinforced with booster sessions at intervals throughout the school year to encourage lifelong health promoting behaviours.

Programmes are most likely to be implemented fully and accurately with initial support by a dedicated

co-ordinator, but professional development and capacity-building for teachers is critically important so they can take over to ensure long-term viability within the school (St Leger and Nutbeam, 1999). International literature points to the need for teacher willingness to engage in the promotion of health as central to the success of health education in schools (Jourdan *et al.*, 2010). How teacher competencies in health education are achieved and put into operation within schools can be complex. Competencies include the domains of knowledge, skills and attitude (Moynihan *et al.*, 2015). Teachers who have received health promotion training tend to be involved more frequently in health promotion projects and have a more comprehensive approach to health education (Jourdan *et al.*, 2008).

School-based programmes can further promote and reinforce their messages if they link with families and create partnerships with the wider community. For example, parent support and home activities that encouraged children to eat more nutritious food, be more physically active and spend less time on screen-based activities was noted by Waters *et al.* (2011) as an important factor in programmes to prevent child obesity.

The HPS model includes many of the characteristics of successful programmes reported in the above literature. The HPS model emphasizes the 'hidden curriculum' conveyed by the whole school ethos, that is, for example, the role modelling provided by the adults in the school, the health and safety aspects of the physical environment and the organization and management of the school that reinforces the desirable attitudes taught in the explicit (formal) curriculum (Nutbeam, 1992, p. 151). The 'hidden curriculum' refers to looking beyond the formal curriculum-based education on the health of individual children and young people to consider the interdependence of school organization, structures, procedures and ethos and its relationships with families and wider community (Stewart-Brown, 2006). HPS also focuses on participatory approaches and trust-based relationships and links between children, school, families, community and health and social services (Booth and Samdal, 1997; St Leger and Nutbeam, 1999; Cognition Education Limited commissioned by the Ministry of Health, 2011). A review of the effectiveness of the HPS approach for the World Health Organization (Stewart-Brown, 2006) found that the most effective programmes were those that promoted healthy eating and physical activity, and those that worked at promoting mental health, particularly those that emphasized conflict resolution and the reduction of violence and aggression (Stewart-Brown, 2006, p. 16). Stewart-Brown (2006) noted that effective mental health promotion programmes represented a particularly good investment for schools as they '… were likely to reduce substance use and improve other aspects of health-related lifestyles that may be driven by emotional distress' (p. 17). Early evaluation of the HPS model found areas that needed improvement, particularly the lack of capacity building for staff and a disconnect between health and education goals (St Leger and Nutbeam, 1999). However, more recently the International Union for Health Promotion in Education's guidelines (IUHPE, 2009) have addressed these issues and have also noted the importance of continuous, active commitment, appropriate capacity building for staff and key partners and the provision of adequate resources to ensure long-term sustainability (Viig *et al.*, 2012; Simovska and Mannix-McNamara, 2015).

WAVE was developed by CPH on the understanding that ES are a key site for health promotion because students are at an age when many lifestyle patterns are being established; ES are credible, authoritative environments; almost all children and many young people are engaged in education and ES also provide extensive links into the wider community. The focus, in accordance with IUHPE guidelines (2000: 111–112), was on a combination of the curriculum, the environment, partnerships and school policies.

DEVELOPMENT OF PARTNERSHIPS

There is a particular emphasis in WAVE on partnerships. As WAVE was being established, the government was promoting physical activity and healthy eating in schools, and had developed new requirements for nutrition as well as support for making students more active, including a tripartite agreement between the Ministries of Education and Health, and Sport and Recreation New Zealand (Petrie *et al.*, 2007). The focus of the tripartite agreement included establishing school/community partnerships to provide regular, quality physical activity experiences. In South Canterbury, a partnership was established between SCDHB, CPH, Sport Canterbury (the regional sports trust), the Ministry of Education, and the ES. As part of its commitment to WAVE, the SCDHB employed a local school principal into a new full time position of Child and Youth Planning Coordinator. CPH and SCDHB initiated a meeting with Sport Canterbury and the Ministry of Education followed by a series of road shows throughout the district to which all education staff were invited. Health staff recognized that to gain trust and access within busy ES their work needed to meet everyone's needs, and set out to develop an approach to health promotion in education that made it easier for ES to

navigate the many organizations offering health resources and to meet their new Ministry requirements.

THE WAVE PROGRAMME

Following CPH meeting with ES representatives in 2006, a local programme model was developed by CPH. The programme's name, 'WAVE' (wellbeing and vitality in education), was the winning entry in a naming competition held for students. WAVE has a stated vision of 'supporting our children and young people to learn well and be well'. WAVE's key aims are:

- working in partnership to achieve better outcomes for health and education
- addressing key lifestyle issues by focusing on the environment ('making the healthy choice the easy choice')
- involving children, parents, Māori (the indigenous people of New Zealand) and the community
- targeting settings and communities with the highest needs, and
- being evidence-based and carefully evaluated.

WAVE targets ES with highest need both systematically, with higher-need ES receiving more funding (ES can apply to WAVE for funding for health-related projects), and informally. Examples of informal targeting included canvassing Māori students' views, and some schools being offered breakfast clubs where there was an identified need.

The implementation of WAVE involved the formation of a WAVE steering group and a working group. The steering group is WAVE's governance body, which is responsible for the direction, oversight and monitoring of the programme, with representatives from local Māori, the district health board, government and non-government organizations. The working group includes WAVE staff, and representatives from the district health board, local councils, non-government organizations and ES. The role of this group is to share information and review progress.

WAVE extends the HPS model across all four types of ES: early childhood, primary and secondary schools and tertiary providers, thus providing comprehensive promotion of health across ES in South Canterbury. Each ES has a representative who works with a WAVE facilitator. The WAVE facilitator helps with building relationships, fostering engagement and supporting school initiatives. Employed by CPH, facilitators spend about one third of their time in settings. Other WAVE staff provide specialized support to facilitators and settings on particular health issues such as nutrition, physical activity and Māori health. All staff receive in-house training, as well as support to undertake generic health promotion training. A key task for staff has been to assist each ES to develop its own health action plan. While action plans are unique to each ES, there are similarities. For example, all ES are encouraged to establish student health teams and to work together and support each other in clusters, and most utilize similar forms of professional development for teaching staff. A WAVE resource centre based at CPH loans a range of equipment, such as sports gear, to ES.

EVALUATION OF WAVE

Researchers over the past two decades have continued to highlight the challenges of evaluating school-based health promotion programmes and determining how best to measure success (Booth and Samdal, 1997; Mukoma and Fisher, 2004; Lee *et al.*, 2005; Inchley *et al.*, 2006; IUHPE, 2009; Pommier *et al.*, 2010; Cognition Education Limited commissioned by the Ministry of Health, 2011). Measuring change in knowledge may be relatively easy but knowledge gain does not necessarily lead to behaviour change (Wang and Stewart, 2013). Ideally, change should be evaluated not only in individuals but also in the school as a whole, including school policies, the physical and social environment and partnerships with families and community groups (Lee *et al.*, 2005). Even systematic reviews may be unable to assess effectiveness because of the variety of measures used to assess outcomes, the predominance of self-report about behaviour change, and the lack of long-term follow up (Inchley *et al.*, 2006). The practical possibilities and needs of school-based interventions are not always compatible with conventional scientific rigour, and the RCT design may be unethical if control schools are required not to implement health promotion over a long period while the study is progressing in intervention schools (Mukoma and Fisher, 2004). Stewart-Brown (2006) discusses the potential inappropriateness of the RCT design for health promotion, noting that it may be misleading and unnecessarily expensive (p. 14) Furthermore, while external funding and support generally focus on assisting schools to implement health promotion programmes, health promotion outcomes occur in the medium or long term, including into adult life (St Leger and Nutbeam, 1999; IUHPE, 2009) and funding issues may dictate a shorter implementation and evaluation time-frame that is not long enough to identify effects (Wang and Stewart, 2013).

It is possible, however, to document sustained changes in ES over time (Inchley *et al.*, 2006), and the ways that schools adapt HPS practices may be tracked at a school or operational level. Inchley *et al.* (2006)

argue that greater recognition needs to be made of the steps schools make towards rethinking their practice and embracing the HPS concept. In the light of New Zealand research (Cushman and Clelland, 2012) that suggests a continuing lack of understanding of the HPS concept, a focus on school practices appears prudent.

WAVE's approach to impact evaluation was informed by the original HPS model, focusing on sustained changes achieved in ES across the three spheres or domains of curriculum, environment, partnerships and school policies. The evaluation aim was to assess change at the level of the whole-school environment over time. The evaluation objectives were (1) to determine the impact of WAVE in ES in South Canterbury and (2) to assess the quality of WAVE interactions with ES.

A mixed method approach was considered most useful for both assessing change over time (a quantitative questionnaire) and investigating the WAVE process (qualitative data). As well as the impact evaluation findings, qualitative data from the process evaluation are included here to help illustrate some of the quantitative findings.

This evaluation was reviewed against the New Zealand Health and Disability Ethics Committee guidelines (National Ethics Advisory Committee, 2006), and did not meet the criteria for requiring review by a New Zealand Health and Disability Ethics Committee, because it was categorized as an audit or related activity and did not have any of the features identified in the Guidelines as having significant potential to cause harm. In addition, the information collected was at a whole-school level and did not include personal health information. Quotes have been de-identified in evaluation reports, and quantitative data are only presented in aggregated form.

IMPACT EVALUATION

A core structured questionnaire was developed by a team that included public health specialists and a lead evaluator at CPH and then adapted for each of the four types of ES. Advisors from the local College of Education and relevant NGOs provided advice and comment during questionnaire development. The questionnaire, to be completed by the key WAVE contact at the setting, covered the health issue areas of: physical activity, nutrition, tobacco/smokefree, alcohol and other drugs, sexual health, mental health and sunsmart. Questions for each health issue were designed to capture change in the HPS domains and investigated, for example, classroom teaching, the ES environment (including access to facilities), engagement with parents, ES policies or guidelines (including their development, enforcement and promotion), work with external agencies and staff professional development. Further general questions addressed cultural inclusiveness and social and financial barriers faced by students.

The questionnaire was administered by each setting's WAVE facilitator at two timepoints–baseline (2007/2008) and follow up 24 months later (2009/2010). As well as providing baseline data for assessment of programme impact, completion of the initial questionnaire provided an opportunity for ES and their WAVE facilitators to identify health-related issues to address in their action plans. To enhance consistency, WAVE facilitators were trained to deliver the questionnaire in a standardized way with minimal prompting.

McNemar-Bowker chi square tests were used for comparisons of categorical variables between baseline and follow-up. When considering differences between groups, percentages based on a large number of respondents are more likely to be precise than those based on a small number of respondents. Selected comparisons for baseline and follow up include measures of statistical significance. When multiple responses for a question/statement were possible (for example, 'Not very well', 'OK' and 'Very well'), a chi-square test (for a two by three contingency table) was used. This statistical analysis considers the distribution of scores for each group and the likelihood that any difference is due to chance. The p value therefore related to the overall distributions rather than direct comparisons within categories. Table 1 presents the results of 18 separate comparisons, based on 18 different questions. A significant overall chi-square test ($p < 0.05$) indicates that the variables are independent (that is responses to the question differ between baseline and follow up), but provides no information as to which specific group is independent. Further analysis is required to identify which particular group(s) differ. In this paper, only the overall p value is provided. All the data were analysed using SPSS version 17.0 statistical package (SPSS Inc. Chicago, Il, USA).

PROCESS EVALUATION

The process evaluation was based on a semi-structured interview with the key WAVE contact at the ES, administered by the WAVE facilitator in 2008, guided by a brief questionnaire specific to each setting type. Follow up interviews were administered in 2009 and 2010. Questions covered the issue areas ES had focused on, the level of activity for those issue(s), and the contribution from key stakeholder groups [parents, school boards, wider whānau (extended family)]. Additional questions explored ES' overall experiences of engagement and communication, barriers to new initiatives, work with

Table 1: WAVE findings across health promoting schools domains

		Baseline (*n*[%])			Follow up (*n*[%])			
Components of health promoting schools		Not very well	OK	Very well	Not very well	OK	Very well	*p* value
Curriculum teaching and learning	Extent classroom lessons give students the opportunity to practice skills rather than learn only nutrition facts[a]	11 (25.6%)	22 (51.2%)	10 (23.3%)	2 (4.7%)	21 (48.8%)	20 (46.5%)	<0.001
Nutrition	From what they have learnt in the classroom, how well students are able to identity healthy food options[a]	0	19 (44.2%)	24 (55.8%)	0	6 (14.0%)	37 (86.0%)	0.004
	How well the setting is able to meet staff needs for professional development, nutrition	8 (11.6%)	29 (42.0%)	32 (46.4%)	5 (7.2%)	17 (24.6%)	47 (68.1%)	0.003
Physical activity	How well the health benefits of physical activity are covered by classroom teaching [a]	3 (7.1%)	23 (54.8%)	16 (38.1%)	2 (4.8%)	17 (40.5%)	23 (54.8%)	0.42
Smokefree	How well the importance of having smokefree homes and cars is covered by classroom teaching [a]	10 (26.3%)	16 (42.1%)	12 (31.6%)	5 (13.2%)	17 (44.7%)	16 (42.1%)	0.32
	How well the setting is able to meet staff needs for professional development, smokefree	14 (25.0%)	22 (39.3%)	20 (35.7%)	5 (8.9%)	14 (25.0%)	37 (66.1%)	0.001
Alcohol and other drugs	How well alcohol and other drug legislation and regulations are covered by classroom teaching [a]	14 (34.1%)	20 (48.8%)	7 (17.1%)	9 (22.0%)	16 (39.0%)	16 (39.0%)	0.03
Mental Health	How well discrimination is covered by classroom teaching [a]	0	25 (58.1%)	18 (41.9%)	0	13 (30.2%)	30 (69.8%)	0.02
	How well help seeking is covered by classroom teaching [a]	0	17 (39.5%)	26 (60.5%)	0	10 (23.3%)	33 (76.7%)	0.19
Sunsmart	How well sunsmart hats is covered by classroom teaching[a,bb]	0	4 (11.4%)	31 (88.6%)	0	1 (2.9%)	34 (97.1%)	1.0
	How well wearing sunglasses is covered by classroom teaching [a,b]	21 (63.6%)	10 (30.3%)	2 (6.1%)	9 (27.3%)	15 (45.5%)	9 (27.3%)	0.004
Partnership between school and community	How well setting works with families to ensure students have breakfast and lunch	9 (13.2%)	26 (38.2%)	33 (48.5%)	2 (2.9%)	29 (42.6%)	37 (54.4%)	0.07
Social and financial barriers	How well setting avoids activities which would exclude some children for financial reasons	6 (9.8%)	20 (32.8%)	35 (57.4%)	1 (1.6%)	13 (21.3%)	47 (77.0%)	0.01

(continued)

Table 1: (Continued)

		Baseline (*n*[%])			Follow up (*n*[%])		
Cultural inclusiveness	How well settings address needs of Māori students through links with iwi	34 (50.7%)	24 (35.8%)	9 (13.4%)	25 (37.3%)	33 (49.3%)	9 (13.4%)	0.03
Smokefree	How well school works with local shops to limit tobacco supply[a]	33 (91.7%)	1 (2.8%)	2 (5.6%)	29 (80.6%)	4 (11.1%)	3 (8.3%)	0.34
Physical and social settings of schools	How well setting encourages students to walk to school	22 (37.9%)	27 (46.6%)	9 (15.5%)	15 (25.9%)	24 (41.4%)	19 (32.8%)	0.11
Physical activity	How well setting encourages students to ride to school	21 (37.5%)	26 (46.4%)	9 (16.1%)	14 (25.0%)	23 (41.1%)	19 (33.9%)	0.07
Sunsmart	Students are able to eat lunch outside in the shade[a]	4 (9.5%)	13 (31.0%)	25 (59.5%)	6 (14.3%)	6 (14.3%)	30 (71.4%)	0.25

[a]Not applicable to ECECs.
[b]Not applicable to secondary schools.

Māori students and their whānau, key initiatives under the umbrella of WAVE (e.g. edible gardens, breakfast clubs and student health teams) and satisfaction with and improvement suggestions for WAVE. Data were analysed thematically.

WAVE gained additional funding to evaluate the programme's effectiveness for Māori. A further background paper (Tunks, 2008), based on a literature search and other available information including Whakatataka Tuarua (a health impact assessment tool for Māori) included recommendations for both programme delivery and the evaluation. Following early process evaluation findings a professional development session on meeting the needs of Māori students was organized for ES and WAVE staff.

RESULTS

Data were analysed by public health analysts at CPH. Almost all (94%) of ES in South Canterbury were participating in WAVE ($n = 95$). Over eighty percent (84.2%) of the 95 ES participating in WAVE completed the questionnaire at baseline and over three quarters (76.8%) completed the questionnaire at follow-up. A total of 73 education settings (29 ECECs, 37 primary schools and 7 secondary schools) completed the questionnaire at both baseline and follow-up. The ES that completed the baseline questionnaires only were excluded from the analysis ($n = 7$). Data from tertiary and alternative education ES are not presented in this paper due to the small number of these ES. Some questions were not applicable to ECECs. For these questions, 44 education settings (37 primary schools and 7 secondary schools) were included in the analysis.

DATA ANALYSIS AND PRESENTATION

There were two important considerations for data analysis and presentation. Firstly, the small number of ES in South Canterbury, and particularly of secondary schools, necessitated the aggregation of data across setting types for increased analytical power. Furthermore, the unit of analysis, as an individual education setting, does not reflect the respective size of the ES. Where possible, data were aggregated across three ES types (ECEC, primary and secondary). However, variations between the respective questionnaires mean that either ECECs or secondary schools were excluded from the analysis for some questions. Data on sexual health education are not included as between-setting differences in questions did not allow aggregation. Secondly, the questionnaires were designed for both project implementation and evaluation. The questionnaire yielded a

large amount of data, of which only a subset relating to impact measures is presented here.

As detailed in Table 1, the results of the impact evaluation for the health issues of particular concern to this project are presented within the health promoting school domains.

CURRICULUM: TEACHING AND LEARNING

In the curriculum area of nutrition, there was a shift in classroom teaching as reported by the key WAVE contacts at ES, over the 5 years of WAVE. Statistically significant differences were reported in how well classroom lessons gave students the opportunity to practice skills rather than learn only facts ($p < 0.001$), with almost one quarter (23%) of ES reporting they did this very well at baseline compared to almost half at follow up (47%). In secondary schools, primary schools and ECECs combined, meeting of staff needs for professional development changed significantly in the area of nutrition ($p = 0.004$), with 46% of ES reporting doing this very well at baseline, compared with 68% at follow up. How well ES were reported to meet staff needs for professional development in the area of smokefree showed significant differences when comparing baseline to follow up ($p = 0.001$). Thirty six percent of ES reported doing this very well at baseline compared to 66% at follow up.

Reported classroom coverage of alcohol-related topics also showed significant difference across the relevant ES ($p = 0.03$). Few ES felt they covered this topic well at baseline (17%) compared with 39% at follow up. There was a significant difference in how well the mental health related topic of discrimination was covered in high schools and primary schools ($p = 0.02$). Over forty percent of ES at baseline thought discrimination was covered very well compared with 70% at follow up. While there was little change in how well the sunsmart topic of hats was covered in primary schools, the baseline was very high, with 89% of ES reporting that they covered the topic very well (compared with 91% at follow up). At baseline, few primary schools reported that they covered the sunsmart topic of sunglasses very well, increasing to 27% at follow up. Process evaluation findings relevant to this sphere of activity indicated that ES valued professional development opportunities and the curriculum support provided by WAVE was widely valued:

> *Certainly as a teacher, it is a large task to try and holistically encompass the whole range of our curriculum so it is great having WAVE that is supportive when we are moving into the different areas like nutrition or cultural development.* (Pre-school)

PARTNERSHIPS AND SCHOOL POLICIES

There was some evidence of increasing partnerships between schools and community. Almost half of all ES reported at baseline that they were working very well with families to ensure students had breakfast and lunch (48.5%) and this had increased to over half at follow up (54%). There was a significant difference between baseline and follow up at avoiding activities which could exclude children for financial reasons ($p = 0.01$). Over three quarters of ES reported doing 'very well' at avoiding activities which could exclude children for financial reasons. This proportion increased over the 5 years of WAVE (57% at baseline compared with 77% at follow up). There was a significant difference between baseline and follow up in addressing the needs of Māori students in terms of linking with local iwi (the Māori language word *iwi* means extended kinship group or tribe) ($p = 0.03$). At baseline, over half of all ES reported not doing very well at addressing the needs of Māori students in terms of linking with local iwi (51%). At follow up this had reduced to 37%.

Process evaluation results indicated that the wider community had become involved in the WAVE project, including parent committees, ES governance groups, staff, parents, iwi, contractors and service organizations. ES were also keen to know what others were doing as part of WAVE, with transfer of ideas and initiatives between ES, and intersectoral collaboration and its explicit benefits were valued by ES:

> *The combination of the two sectors, health and education, working together has been positive. The school now has links with CPH… It has been a successful initiative and has been a catalyst for school health achievements* (Primary School).

ENVIRONMENT: PHYSICAL AND SOCIAL SETTINGS OF SCHOOLS

There were non-significant improvements in encouraging students to be active.

The related process evaluation results indicate that a diverse range of activities had been facilitated by WAVE. Teachers had become role models for health messages and students had taken on leadership roles, with student health teams an increasingly important part of the process. Process evaluation also provided important insights into the WAVE approach. Facilitators were considered WAVE's most essential element. Access to specialist health promotion expertize was also valued by ES, as were the Resource Centre, professional

development activities, and financial support from WAVE. Most ES reported they had been moderately or very active with WAVE activities and ES reported feeling increasingly supported by WAVE over the period of the evaluation. Many projects and activities had addressed more than one health issue, with nutrition and physical activity a particular focus for ECECs and primary schools. Barriers to participation in health promotion activities identified included: lack of time for both parents and teachers; transport in rural communities; parents' belief that health promotion is the role of teachers and some parents' lack of confidence.

DISCUSSION

There are challenges in evaluating HPS initiatives, including debate about which outcomes should be measured. In line with IUHPE recommendations, WAVE took a comprehensive approach, focusing on the whole education setting, and including all ES from early childhood right through to tertiary institutions. Focusing on changes in ES' curriculum, environment, partnerships and policies, assessed at the whole-setting level, enabled the demonstration of change in each of the three HPS spheres.

Outcomes of HPS are complex, as noted by Simovska and Mannix-McNamara (2015: vi) 'Schools are not a 'black box' into which agencies can put programs and resources and expect a reduction in x, y and z in the health and sustainability fields.' However, it is possible to develop competencies (understandings and skills) that enable students to take action to reduce risk behaviours both now and in the future (Simovska and Mannix-McNamara, 2015). A number of significant results of the WAVE evaluation cluster around the curriculum teaching and learning domain of the HPS framework. These relate predominantly to the reporting of improved coverage of health topics.

Significant results were also achieved related to opportunities for professional development and, in some cases, change in teaching style towards more experiential forms of learning. Experiential learning (Kolb, 1984), involving different forms of learning by doing, has been identified as important for the absorption and retention of information. The formal curriculum, according to Booth and Samdal's (1997) re-worked HPS guidelines, should provide sufficient information to allow students to make informed choices about their health, foster the development of a range of skills relevant to physical and psychosocial health and support aspects of personal development. In order to achieve this goal, teachers need to have expertize and confidence in the health-related topics they teach. An important part of honing expertize and confidence is engagement in professional development. This is especially so for the areas that WAVE aimed to influence as they are not always part of teachers' training. As indicated in Table 1, ES reported that a range of areas were covered better in the classroom at follow-up than at baseline. These were also areas that staff said the ES facilitated professional development well. Professional development does not simply consist of formalized instruction. As Richter *et al.* (2011: 116) note, professional development is 'the uptake of *formal* and *informal learning* opportunities that deepen and extend teachers' professional competence, including knowledge, beliefs, motivation and self-regulatory skills'. Institutionalizing professional development around health promotion fields is likely to support teaching and learning by building capacity as well as embedding a clearer understanding of the HPS concept (Cushman and Clelland, 2012).

Partnerships between schools and communities have been identified as important in reinforcing a range of health promoting behaviours (Kahn *et al.*, 2002; Carson *et al.*, 2011; Waters *et al.*, 2011). If young people are receiving consistent or more consistent messages they will have less conflict about what is desired. At a deeper level, however, HPS can also play a role in working with families to help to provide the conditions required for learning, such as the importance of breakfast and lunch. The breakfast clubs that some schools set up are an example of this linkage. Families may resist such attempts to assist due to pride or shame, so effective partnerships between schools and communities are vitally important to the success of these types of initiatives. Effective local partnerships that benefit learners also rely on understanding the community enough to know what might exclude students from particular activities. Students may feel excluded due to religious beliefs, cultural commitments or cost, for example. Social exclusion has been found to be a key determinant of health (Wilkinson and Marmot, 2003), so its avoidance is highly desirable. The improvements that ES made in identifying exclusionary activities and working more closely with iwi indicate raised awareness and possibly confidence in this area. Although Carson *et al.* (2011) identify multicomponent programmes involving partnerships between schools, families and local retailers as effective in reducing smoking uptake amongst young people, the issues involved in engaging retailers are considerable. This is however an area that could be revisited as smoking continues to be de-normalized in New Zealand, and with some small retailers deciding to cease selling tobacco (Logie, 2014) the changing environment may make the ground more fertile for change.

In terms of physical and social environments, the number of non-significant improvements in encouraging students to be active highlights the challenge of demonstrating change over a small number of ES and a relatively short timeframe. However, the range of activities with overall positive changes is noteworthy, lack of statistical significance notwithstanding. Qualitative data highlighted the increasingly important role of the WAVE student health teams. Paakkari and Paakkari (2011, p. 133) have explained, a key part of health education in schools should be to 'develop students' ability to define their own beliefs, identity and social relations'.

In light of the findings of this evaluation there has been further promotion of WAVE in South Canterbury, with WAVE continuing to strengthen partnerships with ES to work together to address the needs of Māori students, and the WAVE funding process has been reviewed to strengthen the equity focus. The evaluation methodology has been revised to reduce the time burden on ES.

Limitations

Some methodological limitations should be noted. The impact questionnaire, although facilitator-administered, relied on self-report from the school representative(s) whose characteristics (e.g. role, number of staff involved) may have varied both between ES and within a setting over time. Similarly, as baseline results were presented back to ES it is possible that the reports of initial results influenced responses to the follow up questionnaire. However, given that the results are mixed, it seems unlikely that this has had a significant impact on the results.

CONCLUSION

The impact of WAVE and the quality of WAVE interactions with ES in South Canterbury were demonstrated by high levels of participation and significant changes in practice across all levels of education and a whole province. This study shows that a robust partnership between health and education sectors can provide the basis for these results. A high level of engagement was achieved, with almost all ES in the province participating. The achievements noted were based on a strong partnership between health and education sectors. Although the approach was based on HPS literature, early engagement with ES allowed the development of a local programme and branding. Partnership was maintained at the operational level by a strong facilitator presence in ES. Project co-ordination also involved health, education and other providers, and the ongoing governance group reflects partnership between health, education, sports and local iwi. Such partnership or collaboration across a number of areas is in line with HPS principles.

The overall outcome of WAVE has been a culture change in South Canterbury, where promoting the health of students, staff and families is becoming part of normal business for ES. The partnership is ongoing, with continued commitment of health, sport, education and iwi. Evaluation of WAVE is also ongoing but has been modified to reduce the burden on ES. From 2013, the results of the process and impact evaluation have been reported alongside a new set of health and education outcome indicators based on routinely collected data, for the province, developed by CPH. These results provide reason for optimism regarding the careful use of a HPS framework, working in partnership with a range of stakeholders towards improving the health and subsequent life chances of young people.

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