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Implementing a social-ecological model of health in Wales

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Abstract

Purpose – The purpose of this paper is to assess the implementation of the Welsh Network of Healthy School Schemes (WNHSS) at national, local and school levels, using a systems approach drawing on the Ottawa Charter.

Design/methodology/approach – The approach takes the form of a single-case study using data from a documentary analysis, interviews with Healthy Schools Co-ordinators ($n = 23$) and stakeholder ($n \sim 93$) discussion of interim findings at three regional workshops.

Findings – There was almost universal adherence to a national framework based on Ottawa Charter principles. Substantial progress had been made with advocacy and mediation, although the framework provided less specific guidance regarding enablement. All-Wales training for co-ordinators, the commitment of co-ordinators to working across administrative and professional boundaries, and support from local education and health partnerships, were important determinants of healthy school schemes' growth and efficiency. Primary schools were more successful than secondary schools in embedding health-related changes.

Research limitations/implications – Although findings are largely based on indirect evidence, the use of a social-ecological model of evaluation provided valuable insights into implementation processes at multiple levels. Findings suggest that strong national support benefits programme development and dissemination and should include effective monitoring of local performance. The national strategic environment was influential at all levels of programme implementation. Priorities for further research include application of the social-ecological model and organisational theory to investigate indicators of sustainability and influences on inequalities in health in school health promotion programmes.

Originality/value – The review illustrates the importance of evaluating health promotion programmes at multiple levels using a systems approach.

Keywords Schools, Health education, Wales

Paper type Case study

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Introduction

The concept of the school's responsibility for health promotion rather than just for health education can be traced to the Ottawa Charter for Health Promotion (WHO, 1986; Burgher *et al.*, 1999; Denman *et al.*, 2002). The Charter identified three strategies for health promotion: to advocate, mediate and enable in five action areas: creating supportive environments; strengthening community action; developing personal skills and reorienting health services towards the prevention of illness and the promotion of health. In doing so, the Charter established the concept of a social-ecological approach to health as the guiding principle of health promotion (Kickbusch and O'Byrne, 1989; Stokols, 1992) and the idea of health as a "resource for everyday life" (Kickbusch, 2003). The European Network of Health Promoting Schools was established in 1992 as a joint initiative between the WHO, the European Commission and the Council of Europe. The role of schools in health promotion was emphasised by the first European Conference at Thessaloniki (WHO, 1997a). Further development of international school health programmes (WHO, 1997b) and the health promoting school followed, with the school increasingly seen as "a place or social context in which people engage in daily activities in which environmental, organisational and personal factors interact to affect health and wellbeing" which could be influenced through health promotion activities (Nutbeam, 1998). International support for health-promoting schools was strengthened by the Egmond Agenda (WHO, 2002).

Whilst it is important to establish whether school health promotion programmes produce their intended effects on health, key challenges include the long-term nature of such intended outcomes and the need meanwhile to understand implementation processes. Thus, much evaluation of school-based health promotion has focused on schools' influence on more immediate intermediate outcomes such as pupils' health-related knowledge, attitudes and behaviour (Lister-Sharp *et al.*, 1999; Schagen *et al.*, 2005). Meanwhile, it is increasingly acknowledged that the implementation of health-promoting schools is a "multi-level, multi-strategy undertaking" (Mukoma and Flisher, 2004) and that schools (Colquhoun, 2005) and programmes (Sanderson, 2000; Spicer and Smith, 2008) should be perceived as "complex adaptive systems" to understand processes influencing intermediate and long term outcomes.

Systems thinking informs both the Ottawa Charter and the social-ecological model of health (McLeroy, 2006). The complex nature of processes leading to health-related behaviour change has resulted in calls for a systems approach to evaluation of health promotion programmes (Naaldenberg *et al.*, 2009; Norman, 2009). Evaluation which begins with the concept of a programme as a complex system asks questions which must be answered partly by reference to systems at organisational levels (Callaghan, 2008). Consequently, a simple explanation, or even definition, of cause and effect, within a complex system, is impractical (Sanderson, 2000; Spicer and Smith, 2008); experimental evaluation designs assuming such simple explanations have produced inconclusive results providing little insight into the processes underlying any discernible effects (e.g. Moon *et al.*, 1999). A social-ecological evaluation model (Gregson *et al.*, 2001; McLeroy *et al.*, 1988) encompassing multiple levels of implementation has been proposed as more appropriate for understanding wider influences on health.

The Welsh Network of Healthy School Schemes (WNHSS) represents an example of a complex system, with aims based on health promotion principles developed by the

World Health Organization (WHO) and former European Network of Health Promoting Schools (ENHPS, now renamed Schools for Health in Europe (SHE)). The WNHSS was established in 1999 with further support in 2001, when the Welsh Assembly Government provided funding to Health and Education partnerships in all twenty-two local authorities of Wales for the appointment of healthy schools co-ordinators (HSCs) whose role was to establish and maintain local schemes. An Assembly Government official has acted as national co-ordinator with responsibility for strategy and for monitoring and accrediting local schemes and training HSCs. Schemes assess their member schools and formally recognise those who complete each phase. Schools appoint in-school co-ordinators who work with HSCs to plan and carry out activities prioritised by the school.

In 2007 the Welsh Assembly Government commissioned an independent review of the WNHSS to assess its progress during the first six years of implementation. The approach developed to undertake this review uses a social-ecological evaluation model to assess:

- how closely the WNHSS conforms to the Ottawa Charter framework of actions of advocacy, mediation and enablement in promoting supportive environments for health; and
- what characteristics of the WNHSS facilitate advocacy, mediation and enablement to promote supportive environments for health.

Methods

Overview

A case study approach was adopted to assess social-ecological conditions influencing implementation and to draw inferences about variation over time and between different sites (Yin, 2003). Case studies are frequently used in evaluation of policy (Butler and Allen, 2008; David and Martin, 2000; United States General Accounting Office, 1990) because of their suitability for understanding impacts at multiple levels and on multiple stakeholders (Government Social Research Unit, 2008). A range of qualitative methods was used within the case study, with findings presented here relating to a review of documentation and interviews with 23 Healthy Schools Co-ordinators (HSCs). Draft findings were discussed at three workshops with a range of regional stakeholders ($n \sim 93$). Data from workshop discussions are used alongside other data. Methods were approved by the School of Social Sciences Research Ethics Committee at Cardiff University.

Documentation review

The websites of the Welsh Assembly Government and National Assembly for Wales (the Assembly Government's precursor) were searched for records of formal decisions on policy and/or funding for the WNHSS as well as consultation and policy documents (see Table I). Education Authority and Local Health Board policies were also searched using keywords such as healthy schools and health promoting schools. To triangulate and augment data, researchers attended two all-Wales meetings of HSCs and conducted a semi-structured interview with the national co-ordinator.

Data	Format	Scope
Scheme monitoring reports (six-monthly) completed by local co-ordinators or managers	Welsh Assembly Government paper records	All 22 schemes, 2001-2007
Her Majesty's Inspectorate for Education and Training in Wales (Estyn) reports	Online	3 schemes – one selected at random from each National Public Health Service (NPHS) area of Wales, 2001-2006
Excel tables showing funding for all 22 WNHSS local schemes	Electronic copies supplied by Welsh Assembly Government official	2000-2008
Local education authority: single education plan	Online	All 22 unitary authorities, 2006
Local health board: health, social care and wellbeing strategy	Online	All 22 unitary authorities, 2005-2008

Table I.
WNHSS: sources of data for review of documentation at national level

Interviews with healthy schools co-ordinators

A semi-structured interview schedule was designed to assess the Ottawa Charter action areas at the local and school level and revised following piloting and review by an Expert Panel. The panel consisted of four UK experts in school-based health promotion, selected from outside Wales so that they could contribute an independent perspective. Telephone interviews were conducted with one HSC from each of twenty-one schemes and two co-ordinators from one scheme ($n = 23$). All interviewees were provided with details of the study and topic guides in advance and gave informed consent. Some HSCs also supplied supporting documents to illustrate what was discussed during interviews, and some of these were used to improve understanding of interview data. Written data were stored with NVivo software using codes based on the theoretical framework. To preserve their anonymity, participants have not been distinguished in quotations used in this paper.

Regional workshops

Three workshops were held, in North Wales, West Wales and South East Wales. Presentations by Welsh Assembly Government and the review team from Cardiff Institute of Society and Health (CISHE) explained the background, structure and purpose of the review and outlined initial findings from the review of documentation and interviews with healthy schools co-ordinators. Delegates from local education and health departments took part in discussions following presentations, and in smaller groups led by members of the Expert Panel, to discuss issues of sustainability, equity and routine monitoring of the network. Researchers took notes during the workshops and wrote summaries of the discussions as soon as possible afterwards.

Analysis

The three Ottawa Charter actions were adopted as the analytic framework. This provided the basis for "pattern matching" as the approach to analysis within the single case study design (Yin, 2003). The documentary review was used to estimate the performance of all three action areas at national level, and of advocacy and mediation

at local level. Interviews with HSCs provided information about the three action areas at national, local and school levels. Thus, the analysis aimed to assess the extent to which practice within the WNHSS carried the principles into each level of working. The three Ottawa Charter actions, advocacy, mediation and enablement, are overlapping and interdependent but we report them separately to facilitate organisation of the material.

Results

The structure of this section is outlined in Figure 1. Results are reported for each level of the WNHSS using as subheadings the concepts of advocacy, enablement and mediation in the Ottawa Charter. The Health Promotion Glossary (WHO, 1998) defines advocacy as:

> A combination of individual and social actions designed to gain political commitment, policy support, social acceptance and systems support for a particular health goal or programme.

Advocacy includes leadership; administrative and management support; development of critical mass; and time and readiness for change (Bowker and Tudor-Smith, 2000; Vince-Whitman, 2005). Enablement increases equity through action first, to reduce inequalities in health and supporting all to achieve their full health potential by exercising more control over their environment. Enablement therefore entails maximising participation. Mediation requires cross-sectoral co-operation and adaptation of health-promotion programmes to local values, in order to reconcile potentially conflicting and diverse interests of different individuals and sectors.

National level

Advocacy. Overall, senior-level leadership appeared to be the main determinant of advocacy for the WNHSS. National leadership by the Assembly Government was highly valued at local and school levels. One HSC told schools that the WNHSS was mentioned in Assembly Government documents and said "We are a respected scheme and we are respected at a high level". Continuity of leadership by the national co-ordinator, with experience in school health promotion in Wales dating back to 1991, is likely to have been a critical factor in the establishment and growth of the WNHSS.

The WNHSS national framework document had been fundamental in promoting adherence to the principles of health-promoting schools. It provided clear guidance and all local schemes adhered to it (The National Assembly for Wales, 1999). Regular communication between national and local co-ordinators, the accessibility of the national co-ordinator and national meetings for HSCs all facilitated this. Overall satisfaction with national management was high but many participants in regional workshops wanted more cross-departmental co-operation at national level and a formal policy supporting the WNHSS. They felt these improvements would provide a more stable management structure and increase job security and confidence in the further funding and sustainability of local schemes:

> They say it's permanent at the moment but it's as permanent as they want it to be (HSC).

The Assembly Government's funding for local schemes had clearly played a crucial role in prompting the spread of schemes across Wales, and the appointment of HSCs in each authority as a condition of funding. The Assembly Government had also set a

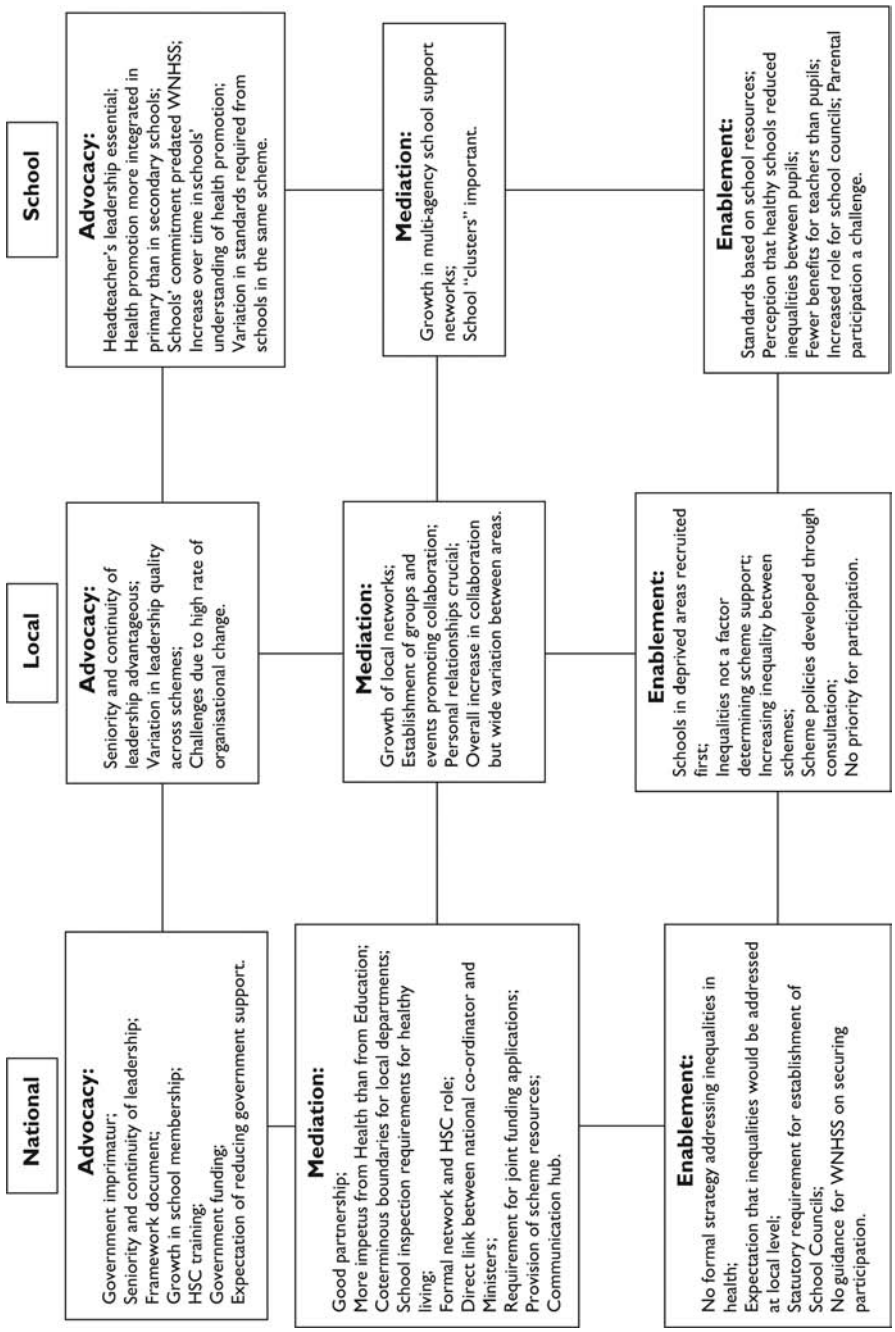

Figure 1.
Features of advocacy, mediation and enablement at national, local, and school levels of the WNHSS

target for three quarters of schools to belong to the scheme by March 2008 and all schools by March 2010. The total number of member schools had grown each year.

National training for HSCs was as important as the national framework document in promoting adherence to the principles of health-promoting schools. The national co-ordinator organised regular training for co-ordinators and assessors, arranging venues and paying expenses. All schemes had been accredited by the Assembly Government, and HSCs returned six-monthly monitoring reports providing information about school recruitment and affording a potentially useful system for collating details of training and school assessments within local schemes.

A supra-national training issue was raised by workshop participants and a HSC, who pointed out that new teachers qualified without an understanding of a whole-school approach:

> [. . .] there's nothing on that in initial teacher training or before to help prepare [teachers]. And PSE [Personal and Social Education] is certainly getting a higher profile now, it used to be just something that you did on a Friday afternoon but it's not now (HSC).

Inclusion of health promotion in teacher training courses would have facilitated training at local level. However, addressing this at institutions in Wales alone would have only a small impact because teachers employed in Wales may have trained anywhere in the UK.

National healthy school schemes such as the WNHSS are expected to become institutionalised (Piette *et al.*, 2002) with a reduced need for central government support. At national level, the time spent by the national co-ordinator on the WNHSS had already decreased and was expected to be further reduced. The Welsh Assembly Government had funded local schemes for three-year periods and this had been adequate to support the establishment and growth of the network, although some HSCs expressed a desire for a more permanent commitment.

Mediation. While partnership at national level in Wales was judged exceptional among member countries of the European Network of Health Promoting Schools (ENHPS), there was potential for greater equality. The WNHSS was funded and co-ordinated from the Assembly Government Health Improvement Division, and where healthy schools were mentioned in policy or strategy, it was largely from a health perspective. Three health policy documents placed an emphasis on school-based health promotion initiatives (Welsh Assembly Government, 2005a, 2005b; Welsh Office, 1998) but the WNHSS was mentioned in only one Education policy paper (Welsh Assembly Government, 2006).

Local partnerships between Education and Health departments had been facilitated by structural change in 2003 when the five local health authorities had been abolished and replaced with 22 Local Health Boards whose areas were coterminous with those of unitary authorities. More recently, Estyn, the organisation responsible for inspecting schools in Wales, had introduced a requirement that schools should produce evidence that they promoted healthy living (Estyn, 2007). HSCs said this link between health and educational attainment had been important in encouraging interest from the Education department and had also helped to raise schools' awareness of the value of healthy school schemes.

Strong national leadership, regulation and guidance were very important in shaping and supporting the formal network structure of the WNHSS. The national framework

required the WNHSS to develop into a true "complex adaptive system" with embedded subsidiary networks, and designed the role of the HSC to blur professional boundaries. Networking with other schemes and local professionals, and facilitating networking between schools, were clearly defined as part of the HSC role (The National Assembly for Wales, 1999). The framework also promoted collaboration by requiring support for schemes from both local education and health departments.

Regular all-Wales meetings and training for co-ordinators were important mechanisms encouraging communication and collaboration between HSCs at national level and also assisted in reinforcing national aims and expectations. A direct link between the national co-ordinator and ministers meant that HSCs felt that their views mattered and received an appropriate response at Assembly Government level. For example:

> [. . .] we were concerned that there was a lack of resources for primary sexual health and [national co-ordinator] took that further and now we have a DVD and set up training for us to use that DVD so I do think things are fed back and as a result they do try and [take] action.

The Assembly Government drew together good practice from local schemes, and shared and formalised these approaches throughout Wales. It provided all schemes with national guidance and free resources for schools.

Nationally, HSCs felt they had developed into a very cohesive group with a non-competitive spirit leading to an overall willingness to share, and that this resulted from direction at national level:

> That's the real plus for Healthy Schools, we do share as much as possible [. . .] that is a credit to [national co-ordinator] because [she has] insisted from the beginning that we are all open, and it has been excellent.

HSCs had also formed subsidiary networks, with three embedded regional networks in North, South West and South East Wales.

Enablement. The Welsh Assembly Government had no overall strategy addressing inequalities in health, although a flagship programme, Communities First, had been set up in 2001 to improve conditions in the most disadvantaged communities. There was no requirement for the WNHSS to make provision for socioeconomic differences between implementation sites. Welsh Assembly Government funding for the WNHSS was provided to local schemes on a formula basis, which took account of the number of schools to be supported. The national framework referred to the recommendation in the English Acheson Report (Acheson, 1999) that further development of Health Promoting Schools should be "initially focused on, but not limited to, disadvantaged communities". However, the framework gave no specific direction to schemes regarding adjustment of support according to need.

The Welsh Assembly Government's statutory requirement for every school to have a School Council encouraged participation of pupils in school affairs. This requirement, effective from November 2006, built on development of good practice in healthy school schemes, which had already established pupil groups in member schools. Four of the WNHSS national aims encouraged participation through their reference to all members of the school community, all staff and all pupils but there was no specific guidance in the framework regarding methods for securing participation of all staff, pupils, parents and others in school actions.

Local level

Advocacy. At local level too seniority and continuity of leadership offered a significant advantage. Strong leadership from the Health department in one area had resulted in establishment of a local healthy school scheme in 1999 before the WNHSS was funded. This partly explained the scheme's success in recruiting all the schools in its area and signified a major commitment by local officers to the healthy schools concept. Exceptional continuity of leadership had also benefited this area: the HSC had been responsible for setting up the scheme in 1999 and the same lead officers from local education and health departments were also still in post. In some areas, senior leadership came from the HSC working at a senior level. One commented:

> I suppose if I was working at a lower level I wouldn't have the mutual respect and the influence to say, 'I want that to happen'.

The importance of support from senior officials was confirmed by workshop participants who reported that in areas where the Directors of local departments did not engage with the scheme, it was difficult to develop relationships with others in their departments and this limited the HSC's sphere of influence. Policy documents in most areas testified to at least nominal commitment to healthy schools at a strategic level but only a minority suggested an understanding of the whole-school approach, e.g. "This programme clearly contributes towards improving health and well being of children and staff alike, together with aiming to strengthen ties with local communities."

Management of schemes at the local level was not always as clearly structured as at the national level. Nearly all HSCs mentioned a range of departmental changes that had affected their work and organisational change appeared to have adversely affected some schemes. Qualities such as leadership, management systems, continuity of personnel and identification of common interests appeared at least as important as time in overcoming the effects of near-continuous change in local organisation.

Variation in the quality of leadership from local education and health partnerships appeared to affect schemes' capacity for advocacy through training and recruitment and access to resources. The growth of schemes presented challenges for HSCs in terms of resource availability, complexity and support. Assembly Government grants provided for the employment of more than one healthy schools officer in areas with large numbers of schools, and here local teams had to develop new structures. Local management support for a few HSCs helped them to develop professionally to meet these challenges and to review progress, assess priorities and allocate resources. Senior level responsibility for a scheme was often associated with easier access to resources, most notably where the HSC's salary was locally funded, leaving the Assembly Government grant available to fund support for schools; or to cover for the absence of a HSC on leave.

There was a contrast between the national picture of steady growth of member schools and well-organised training with wide local-level variation in recruitment and training. Co-ordinators were responsible for recruiting schools and training staff, governors, and others involved in schools. While this produced steady overall growth of the WNHSS, there was variation in scheme recruitment rates, with some having recruited 90-100 per cent of schools and others only 40-70 per cent. There was also wide variation in the amount of training schemes were able to provide. Some HSCs planned

training as part of a regular programme but others had few resources to plan ahead or pay for cover:

> [...] we don't have a training programme every year because of the funding and capacity problems.

The variation at local level in the extent to which healthy school schemes had been assimilated in local policy and management structures suggested that continued national support would be beneficial.

Mediation. Each co-ordinator had seen the importance of a good network:

> We can't get anything done unless we have good strong partnerships because ultimately we're such small teams.

In most schemes, steering or management groups were an important mechanism for strengthening local networks by including collaborators from a range of organisations. Special events also served this purpose:

> Whenever we have events we invite the Director of Education, the Leader of the Council, councillors, we get people in the authority involved as much as we can.

Personal relationships were perceived as crucial both in forming links with others and maintaining working relationships and HSCs had fostered relationships with members of local education and health departments. Most HSCs reported a strong local partnership, often developed through involving senior members of both teams in management of the scheme, or through building relationships with the directors of departments. Most had seen an improvement in interdepartmental collaboration over time. However, there was a wide range in the quality of joint working. Personal relationships between senior management and their attitudes towards cross-departmental working influenced co-operation and co-ordinators saw themselves as having an important role in linking the two departments and managing the relationship between them.

Enablement. Most schemes had prioritised recruitment of schools in deprived areas and in some areas the healthy school scheme had a central role in reducing health inequalities. At the other end of the spectrum, one scheme had no policy to prioritise schools in deprived areas and many such schools had not volunteered to join the scheme.

HSCs felt they were in the best position to judge schools' needs for support, but this did not usually relate to considerations of socioeconomic disadvantage. While all valued equity, they seemed unlikely to contribute to reducing inequalities in health. If insufficient resources were available to be distributed equally to all schools, HSCs tended to allocate them on grounds of relevance to the actions being undertaken and not to address wider inequalities. Indeed, some HSCs felt that because schools in disadvantaged areas were already receiving extra support through Communities First, schools outside these areas should receive more support from the scheme itself, trying to "share it out a bit so that everything doesn't go to that one school". And providing extra support to schools in disadvantaged areas could damage relationships between schools and between HSCs and schools: "... the perception from other (non Communities First) schools is that these schools get everything and they get nothing." Nevertheless, some HSCs did report additional effort in areas of disadvantage: "We've always worked that little bit harder and offer more support to disadvantaged areas".

But other co-ordinators were unequivocal that support was the same for all schools, for example:

> The support is the same no matter where the school is, no matter where they are on the scheme, what they receive throughout is the same, whether they're just joining or whether they're second, third, or fourth year, it's ongoing and it doesn't differ according to area or need.

Many workshop participants also pointed out that national designation of socioeconomically deprived areas did not take into account other factors which affected schools and their pupils. For example, areas characterised by rural deprivation were generally not targeted to receive extra support; and there were also pockets of disadvantage within the catchment areas of most schools, regardless of school location. Consequently, co-ordinators were reluctant to label schools as "deprived" or "affluent".

Monitoring reports revealed differences in recruitment rates of schemes suggesting there was increasing inequality at local level between schemes. The gap in recruitment between the most and least successful schemes had widened from a difference of approximately 50 per cent in 2001 to approximately 60 per cent in 2006. Comparison of these two schemes suggested the number of schools in each area, their previous experiences in health promotion activity, extent of deprivation, security of local funding for staff and continuity of staff could be relevant in explaining the difference.

Most HSCs reported that consultation with colleagues, other stakeholders and schools informed decisions regarding scheme policy. However, scheme policies themselves tended to value schools' coverage of health promotion topics and paid less attention to the role of participation in implementation of actions. For example, some schemes were introducing requirements that schools should have covered a minimum range of topics by the time they completed Phase 3 because HSCs were concerned that schools were reluctant to address "unpopular" topics such as sexual health and substance misuse. While issues with engagement in all schools were universally acknowledged, there was no evidence that schemes had developed any methods to address them.

School level

Advocacy. Most interviewees thought that at school level, senior leadership from the head teacher was essential for a school to integrate health. Leadership from in-school co-ordinators was also very important but insufficient where the head teacher did not also engage with health promotion action. The waiting lists of schools wanting to join local schemes demonstrated that nearly all head teachers were committed to school health promotion. As at local and national levels, continuity of leadership was advantageous. In schools where the head teacher or in-school co-ordinator had changed, progress with health promotion was delayed until the new member of staff had settled in.

HSCs offered regular visits to help schools to plan actions, set targets and prepare for assessments. Most also offered additional support if required although some head teachers had an independent vision of what they wanted to achieve, and did not request extensive support, for example: "I'm just a mechanism that actually gets them focussed on something" (HSC). Many co-ordinators felt they had an important role in passing on information about national initiatives and policy decisions to local schools because communications sent directly from the Welsh Assembly Government to

schools were not always recognised as important. Substantial differences in the progress of primary and secondary schools suggested that head teachers' leadership was not enough and that support from schemes was more suited to primary schools. Almost all HSCs reported that secondary schools had more difficulty in implementing a whole-school approach. Many related this to the schools' larger size, complexity and resources:

> [. . .] secondary schools get a bit more complex because the schools are so big and don't have enough staff. I tend to work with one person and that person tends to be on the Senior Management Team and they then report back to their Senior Management Team.

Three interviewees suggested that in secondary schools, working with pupils was easier than working with staff. One of these thought that school councils were "the way forward" but another described councils in secondary schools as "tokenistic". There were no other suggestions regarding how to provide support most effectively. And although, in general, HSCs felt that secondary schools needed more support, they were less certain about what kind of support would be appropriate.

HSCs often balanced the need for time to assimilate organisational change against a need to reward effort and to ensure that schools were not discouraged by being required to spend too long in one Phase – suggesting that in some instances a truly integrated approach might be compromised, and introducing variation in standards required of schools in the same Phase of the programme. There was no specific direction in the national framework requiring standards for schools to be linked to Phases of the scheme.

Healthy school schemes appeared to be meeting a widespread need rather than introducing new ideas and the critical mass in favour of school health promotion may have predated the establishment of most schemes. One Coordinator said: "I don't think we need to win people over – everyone in [scheme area] is on board already, all self-motivators."

Notwithstanding differences between schools, and often despite some turmoil at local departmental level, many co-ordinators reported that overall, schools had demonstrated increasing awareness and understanding of how health promotion could be integrated into school life. One commented that halfway through the second Phase, schools were becoming very aware of health and by the third Phase: "it's just there in everything they do". Changes noted over time included a higher priority given to PSE topics and more involvement of school councils in healthy schools work. Other signs of progress included differences in children's play following marking out of school yards for games and provision of play equipment; increased acceptance that pupils should have access to drinking water and healthy food during the school day; and teaching of sex education.

Mediation. HSCs had been instrumental in helping schools to develop multi-agency support networks. HSCs also linked in with existing school "clusters" where staff from a secondary school together with all the primary schools in its catchment area, regularly met to discuss school business. Excellent communication between school staff within the same cluster meant that these networks were very influential. One HSC said that the local scheme's reputation depended on it:

> [. . .] heads talk to heads and they know what goes on and if it wasn't held in any esteem and it wasn't highly thought of I would sink in this borough.

Most co-ordinators had realised the potential of clusters to increase the efficiency of their scheme and as a way of bringing maximum benefits to the maximum number of schools. In one area the HSC together with co-ordinators from two other Assembly Government-funded programmes regularly met school cluster groups to plan how new national health promotion policies should be implemented. Growth of schemes and good practice in schools were accelerated through communication within clusters.

Enablement. One way in which HSCs tried to compensate for disadvantage was through the standards set for assessment of progress through the Phases of the scheme. All recognised differences in schools' starting points in terms of the facilities available to them, for example:

> You certainly see the differences, but it's things we can't control – you could go into one school and their grounds are fantastic and they've got playing fields, and you go into others and you've just got a concrete yard that's on a slope with a huge stone wall around it. They're making the best of what they've got but they're not always on an equal footing to start with are they?

Co-ordinators felt they might discourage schools by setting unachievable targets. Their view was that "it's about the distance travelled for that particular school". Thus, there was a tendency to maintain the gap between schools starting from different levels of advantage.

There were no doubts about the capacity of the WNHSS to reduce inequalities between pupils and that each child benefited from school actions according to need. A participant at a regional workshop said "It's the school community itself that matters" and others agreed, believing that the enthusiasm of the head teacher and the ethos of the whole school were independent of the level of pupil, family or area deprivation. There was also a feeling at one workshop that children and young people as a group were discriminated against in terms of access to health services and other public services. Deprivation of individual children was likely to be missed by other services, and healthy schools could help to provide the support needed. However, HSCs and workshop participants felt that teachers did not share equally in the benefits of school action and staff that took sick leave were often stigmatised.

Healthy schools co-ordinators reported the increasing importance of School Councils, both in stimulating the interest of pupils in health promotion and through their contribution to school actions and assessment. It was generally agreed that School Councils were effective in primary schools and were the "future" for secondary schools, with Council development seen as a priority for in-school co-ordinators at secondary schools.

Participation of parents in Healthy Schools had been facilitated by links with initiatives such as Parents and Children Together (PACT) (National Literacy Trust, 2009) and Cymru Cooks (ContinYou, 2009); invitations to parents' assemblies or evenings; producing parents' information sheets and running small projects to talk to parents about healthy lunch boxes. However, all HSCs thought that parental participation was much more difficult to initiate and maintain than pupil participation. One co-ordinator pointed to the need to increase parental understanding of school health promotion aims since parents had the capacity to undermine any efforts made by the school.

Discussion

Findings support the view that settings or contexts for health promotion are crucially important not only for individuals but also for organisations and programmes. Practice in the WNHSS was facilitated by international health promotion policy, through the WHO and ENHPS (SHE). The WNHSS national framework document was a key implementation tool for schemes and schools of health promotion principles developed at a global level. At national level, the wider strategic context in Wales influenced direction for programme implementation in each action area and differences in the strength of the strategic environment were played out at local and school levels. Thus the competence of the WNHSS in mediating was facilitated by Welsh policy emphasis on partnership (UK Government, 1998). However, there was no formal national strategy on reducing inequalities in health to guide the programme and so the framework did not make requirements in this area, or provide detailed assistance for implementation.

The social-ecological approach adopted by this study identified the effects of national and international policy on the programme as a whole and how this affected implementation at local and school levels. The review's single case study design assisted in understanding the complexity of contexts and internal relationships. There has been increasing recognition of the need for policy studies to address the effects of wider organisational contexts on programme implementation processes and to adopt more explicit theoretical frameworks (Sanderson, 2000). Application of the social-ecological model in this review enabled a systematic focus on health improvement by extending the scope of study beyond narrower issues of compliance with national policy and demonstrated the importance of considering all levels of programme implementation. The method has been useful not only in evaluating action taken – advocacy and mediation – but also to identify gaps in implementation in relation to enablement. It has also allowed "plausible inferences" to be made about which processes might be more generally likely to produce the same outcomes elsewhere (Pawson and Tilley, 1997). Yin (2003, p. 10) calls this "generalisation to theory" which he likens to a laboratory experiment carried out to see if it confirms a scientist's hypothesis: "[...] case studies, like experiments, are generalisable to theoretical propositions and not to populations or universes. One example of a "plausible inference" for each action area is outlined below to suggest how findings may be used to inform practice elsewhere.

We may infer that the commitment of at least one powerful person within each organisational unit is vital to developing and sustaining a school-based health promotion programme. The WNHSS is not a "grassroots" initiative. Strong national leadership, administration and management were crucial in establishing the WNHSS in all areas of Wales through the status imparted to local schemes and because of variation in local departmental support. In many areas, advocacy for healthy schools was still catching up with nationally-driven developments. Schemes made less progress in areas where senior health and education department heads were less supportive and in schools where head teachers did not engage with health promotion. Therefore the proportion of schools in Wales recruited to the WNHSS was not an accurate guide to the programme's readiness for independence of national support. For the programme to become self-sustaining, it seemed important for critical mass to have been reached within a majority of organisational units at both local and school levels.

This inference is supported by a review of diffusion of innovation in health service organisations that found that a model of adoption of a discrete innovation by individuals (Rogers, 1995) was not useful in describing how a complex programme would be diffused among complex systems (Greenhalgh *et al.*, 2004). Thus, widespread establishment of schemes and commitment of organisational leaders should probably be regarded as essential precursors of effective programme dissemination and as a first step towards programme self-sustainability.

A second inference is that a network structure is a good choice for school health promotion programmes. The network organisation of HSCs was important first, because it offered many advantages over more hierarchical structures (Larson and Starr, 1993; Valente, 1996) and second, the HSC's role was designed to extend the network to local and school levels. The network structure facilitated advocacy because it accelerated dissemination and encouraged the development of personal relationships. The WNHSS emphasis on sharing and communication between HSCs validated development of personal relationships which were important, not just among HSCs, but in the local and school networks they established. The informal quality of the HSC network combined with strong national leadership promoted almost universal adherence to the national framework.

Third, findings suggest that action to reduce inequalities in health must be co-ordinated and specified at national level. There was a perception at school or local level that calibrating levels of support to levels of deprivation would not only damage relationships but would also be unfair. Only at national level was there an opportunity to see the variation in performance of schemes and in the standards set by schemes for schools. The capacity of one programme to address more general inequalities in health is limited. However, measures to investigate reasons for slower recruitment and to respond promptly to emerging issues such as the variation in standards for schools could reduce inequalities between programme implementation at different sites.

Study limitations

Data from interviews were summarised, rather than transcribed, by members of the review team, introducing the possibility of bias through initial judgements regarding the relative importance of findings. However, data were triangulated by use of other methods within the review as a whole (Rothwell *et al.*, 2010); and teamworking and review processes also protected against individual bias. Therefore, the data could reasonably be expected to have "synchronic reliability" (Kirk and Miller, 1986).

As a "complex adaptive system", the WNHSS is constantly changing, with the current study representing a cross-sectional investigation conducted at one point in time. It should also be recognised that whilst information was collected on experiences at the school level, further exploration at the school level is necessary including interviews with teachers and observation. Finally, the review assessed the implementation of the Ottawa Charter Agenda but did not include data on health outcomes to understand how the latter may relate to processes.

Implications for policy, practice and research

The importance of national leadership for the WNHSS suggests that plans for national health promoting schools programmes should allow significant capacity for national co-ordination, administration and support. The network structure, national framework

document and the HSC's role were key tools which worked across all levels of implementation and demonstrated a model which could be of value elsewhere.

While national strategy clearly places limits on how much one programme can achieve, the importance of a framework document that includes detailed guidance for enablement as well as advocacy and mediation would contribute to reducing inequalities between programme implementation at different sites. Provision for national and local overview of schemes and schools respectively would help to identify needs for extra support where implementation fell short of the expected standard and promote insight into reasons behind the differences. National standards for schools related to each programme stage would be useful to focus attention on sites requiring more intensive support and provide impetus to develop appropriate strategies. Standards emphasising participation processes would render material conditions less important in schools' achievement.

Future research could explore perceptions of the consequences of full commitment to enablement of pupils and other groups. Paradoxically, the powerful individuals who were so essential to the establishment and progress of the WNHSS risked losing some of their authority if the programme had enabled individuals to control the determinants of their health to a greater extent. Ultimately, enablement presents a challenge to social inequalities perpetuated through policies promoting continuous economic growth (Graham and Kelly, 2004). Investigating leaders' expectations of health promotion programmes, and clarifying their attitudes towards changing the balance of power, would inform a more open approach to programme delivery.

More broadly, the key advantage of using a social-ecological evaluation model is that it enables clarification of influences on programme implementation at each organisational level. Development and testing of predictive models in social-ecological evaluation of school health promotion programmes would provide useful guidance for improving political, local and school settings for health promotion. A theory-based social-ecological approach would be particularly valuable in identifying appropriate strategies at each programme level for reducing inequalities in health and for identifying indicators of programme sustainability within each participating organisation. Of particular interest at school level, are the perspectives of parents, staff, pupils and community agencies on health promotion in schools (Eisenberg *et al.*, 2008; Gonzalez, 2005; Simovska, 2005) and their effects on organisational behaviour. Further use of Ottawa Charter principles in studies of health promoting schools programmes would assist cross-cultural comparison in estimating the validity of inferences drawn from this review.

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