EVIDENCE BASED POLICY AND PRACTICE

Can Health Promoting Schools contribute to the better health and wellbeing of young people? The Hong Kong experience

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J Epidemiol Community Health 2006;**60**:530–536. doi: 10.1136/jech.2005.040121

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Accepted for publication 1 January 2006

Background: The Health Promoting School (HPS) is a WHO sponsored framework, compiled to enable education and health sectors to be more effective in school based initiatives.
Aims: This study attempted to test the hypothesis that students from schools that had comprehensively embraced the HPS concept as indicated by the Healthy School Award, were better, in terms of health risk behaviour, self reported health status, and academic results, than students from schools that did not reach the standard of the award.
Methods and Results: The results presented came from nine schools (four primary and five secondary) applying for accreditation of the Healthy Schools Award after adopting the HPS framework for two years. Regular consultancy support and training were available to all schools. Students had completed before and after surveys to assess their health behaviours, self reported health status, and academic standing before the two year intervention, and at its end. Data from the before and after surveys of the students attending schools that reached certain level of HPS standard as indicated by the award, were compared with students whose schools did not receive the award, and the results showed differences. Some differences were found to be more significant among the primary school students than secondary schools students. This illustrated early intervention for lifestyle changes to be more effective. Students' satisfaction with life also improved if their schools adopted the concept of HPS comprehensively.
Conclusions: The results suggest that comprehensive implementation of HPS would contribute to differences in certain behaviours and self reported health and academic status.

The Ottawa Charter for Health Promotion stated that ''health is created and lived by people within the settings of their everyday life; where they learn, work, play and live''.[1] It was further affirmed at the Bangkok Conference in 2005 that the policies and partnership empowering the communities to improve health and reduce health inequalities should be at the centre of national and global health development.[2] The Healthy Cities project was the first and widely known example that occurred in many countries from the late 1980s with parallel initiatives in other settings such as schools, workplaces, hospitals, neighbourhoods.[3] The school is a fundamental institution not only in building educational outcomes, but also creating opportunities for health improvement of students to enable them to be active participants in their communities.[4]

Many studies have shown the potential of the settings approach in advancing school health outcomes through the concept of Health Promoting School (HPS).[5–7] It was first identified at a WHO conference in the early 1980s embodying a holistic, whole school approach to health promotion in which broad health education curriculum is supported by the environment and ethos of the school.[8 9] Well developed HPS programmes are cost effective in encouraging children to adopt health improving behaviours and reducing health compromising behaviours.[10 11]

Healthy Schools Award schemes are popular among European countries as a structured framework that improves the development of school health initiatives and also serves as a system of monitoring and recognising achievements.[12] An award scheme would produce changes in children's health behaviours and also facilitate health promotion policies and practices in the school.[13]

The Centre for Health Education and Health Promotion of the Chinese University of Hong Kong (CHEP) launched the Hong Kong Healthy Schools Award Scheme (HKHSA) in 2001.[14] It was modelled on the WHO Western Pacific Regional Office HPS framework covering six key areas (health policy, physical and social environments, community relationships, personal health skills, and health services) that were designed to assist schools in addressing particular health issues strategically (appendix 1, available on line http://www.jech.com.supplemental).[15] Each key area has a number of components and respective sets of indicators based on extensive literature and documentary reviews, which were relevant, adaptable and achievable with a contextualisation specific to Asia Pacific countries.[16–20]

The CHEP has designed the rating system to enable schools to fulfil the criteria for accreditation to different levels of the award namely bronze, silver, and gold as suggested by WHO.[7] The rating systems and indicators are mainly directed at improving health promotion actions and outcomes that have been validated by a group of HPS experts from different parts of the world during their field visits to schools in Hong Kong.[21–24] A detailed account of development, categorisation, and means of assessment has been reported elsewhere.[25]

This study attempted to test the hypothesis that students from schools reaching a certain standard of HPS as indicated by the award, were better, in terms of health risk behaviour, self reported health status, and academic results, than students from schools that did not reach the standard. The students being studied came from those schools that had applied for accreditation in 2004 after having implemented and followed the framework of the HKHSA for two years (2001 to 2003).

Abbreviations: HPS, Health Promoting School; HKHSA, Hong Kong Healthy Schools Award Scheme; HKSHSQ, Hong Kong student health survey questionnaire

Table 1 Distribution of students among the primary and secondary schools with and without awards at baseline and audit assessment periods

	Primary schools		Secondary schools	
	HPS with awards	HPS without awards	HPS with awards	HPS without awards
Baseline period (before) 2001	387	65	325	183
Assessment for award (after) 2003	454	56	327	386

METHODS

Research design

A cross sectional design was used to study cohorts of children in five primary schools and four secondary schools presenting to be audited for accreditation of HKHSA after two years of implementing the scheme. All schools joining the HKHSA scheme received consultancy support from the HKHSA project team helping them to explore all possible actions to establish the HPS framework. The school then identified priorities that were within their resources and levels of commitment. The details of implementation have been described elsewhere.[25]

Measurements

Student health surveys were conducted at the time of the baseline assessment in 2001 and during formal assessment as part of the evaluative measures of a school's effectiveness in promoting health, for consideration of awards in 2004. The Hong Kong student health survey questionnaire (HKSHSQ) used for this purpose incorporated the questionnaire from the 1999 youth risk behaviour survey that was based on the Centers for Disease Control and Prevention—youth risk behaviour surveillance instrument.[26–28] Part of the HKSHQ also used the pupil questionnaire from the Wessex Healthy Schools Award Scheme Evaluation (WHSASE-students).[18] Two scales, the satisfaction with life scale (LIFE),[29] and the depression self rating scale (DSRS) were are also adopted to study the emotional health of the school children.[30 31] An evaluation framework was developed to organise the data collection and analysis. The reliability and validity of the measuring instruments have been tested among students in Hong Kong and details of this framework are described in another paper.[32]

Data analysis

All data were analysed using SPSS package version 11. Cross sectional comparisons of students' health based on items in the HKHSQ from similar grades at baseline and two years later were conducted. They are students in their fourth year at primary school (P4) or third year of secondary school (S3). Students from the same year level were stratified into those groups from schools that had achieved silver and bronze awards (no schools achieved the gold awards) with the students from the schools that did not manage to achieve any award but were involved in the scheme. The levels of changes between students from these two groups of schools were then analysed. The hypothesis was that students from schools that had reached a certain standard as indicated by the award, were better in terms of health and academic results than schools that did not reach the standard. The proportion of students with particular health behaviours or health status was tabulated and χ^2 analyses were used to test for differences between baseline and period of assessment for awards at 5% level of significance. For those measurements expressed as numerical scores, the difference in scores was analysed by *t* tests.

Primary 4 (P4) and secondary 3 (S3) students were chosen because they were the middle year levels in the primary and secondary schools. It was argued that this would enable better consistency in observing changes in health behaviours and self reported health status after having attended the same school for a few years.

Sample size

Based on previous surveys[27 28] and the assumption that 15% of students who had unhealthy eating habits or were emotionally disturbed (π_0 = null hypothesis proportion), would decrease to 10% after intervention (π = proportion of interest), the sample size for each group would be 36 (N) giving a power of 80% (u = 0.84) and level of significance at 5% (v = 1.96).

$$N = \frac{\left\{u\sqrt{[\pi(1-\pi)]} + v\sqrt{[\pi_0(1-\pi_0]}\right\}^2}{(\pi-\pi_0)^2}$$

RESULTS

Cross sectional comparison of student health based on items of HKHSQ was conducted among 962 P4 students and 1221 S3 students (table 1). For the post-intervention period, students from the same grade (same age group) were used for comparison and there were no differences between boys and girls in the study

Self reported health status and academic standards by students

The proportion of students in both primary and secondary schools reporting their academic results as being poor to fair among those schools with awards decreased after implementation of HKHSA and was found to be significant among secondary students (−14.3%, 42.6% *v* 28.3%, p<0.001, table 2). The proportion of students reporting their health status as being poor to fair decreased after implementation of HKHSA in schools with awards and was found to be statistically significant in primary schools (table 2).

Dietary behaviours

The poor dietary behaviours in terms of inadequate intake of fruits, vegetables, and milk, such as having less than two servings of fruits per day, less than three servings of vegetables per day, and less than two glasses of milk per day deteriorated over the two years of intervention study for all schools, but it was far worse among the non-award schools (for primary schools +18.5% *v* +7.2%, +29.3% *v* +12.6%, and +12.7% *v* +4.8% respectively, and for secondary schools +7.8% *v* +1.7%, +6.6% *v* +3.7%, and +3.7% *v* +0.5% respectively; table 2). The proportion of students buying food from hawkers or fast food shops decreased more noticeably among students from the primary schools with awards with significance (−5.3% p = 0.024, −8.4%% p = 0.01 respectively table 2).

Table 2 Difference in reported health and academic performance and dietary behaviours of students between awarded and non-awarded schools at baseline and two years after intervention

Grade	Primary 4						Secondary 3					
Award	Award			Non-award			Award			Non-award		
Before/after	Before	After	Δ%	Before	After	Δ%	Before	After	Δ%	Before	After	Δ%
Reported academic result (poor to fair)	22.6% (74)	18.9% (75)	−3.7%	15.0% (9)	20.4% (10)	+5.4%	42.6% (123)	28.3% (83)	−14.3%** (p=0.000)	34.3% (59)	37.3% (135)	+3.0%
Reported health status (poor to fair)	28.8% (111)	20.9% (95)	−7.9%** (p=0.009)	27.7% (18)	25.0% (14)	−2.7%	45.6% (145)	38.7% (125)	−6.9%	45.1% (82)	33.8% (130)	−11.3%** (p=0.009)
Dietary behaviour												
Had <2 servings of fruit per day	74.8% (288)	82.0% (323)	+7.2%** (p=0.015)	63.1% (41)	81.6% (40)	+18.5%** (p=0.031)	90.1% (291)	91.8% (292)	+1.7%	84.0% (152)	91.8% (346)	+7.8%** (p=0.005)
Had <3 servings of vegetable per day	80.2% (308)	92.8% (347)	+12.6%** (p=0.000)	66.2% (43)	95.5% (42)	+29.3%** (p=0.000)	93.8% (304)	97.5% (310)	+3.7%** (p=0.023)	89.4% (161)	96.0% (362)	+6.6%** (p=0.002)
Had <2 glasses of milk per day	83.7% (323)	88.5% (378)	+4.8%** (p=0.045)	81.5% (53)	94.2% (49)	+12.7%** (p=0.041)	95.4% (309)	95.9% (305)	+0.5%	91.8% (167)	95.5% (365)	+3.7%
Skip breakfast	5.7% (22)	9.5% (37)	+3.8%** (p=0.045)	14.1% (9)	15.9% (7)	+1.8%	30.9% (100)	33.2% (95)	+2.3%	27.2% (49)	24.3% (86)	−2.9%
Buy food from hawkers	15.8% (60)	10.5% (47)	−5.3%** (p=0.024)	16.1% (10)	13.2% (7)	−2.9%	49.2% (154)	42.3% (134)	−6.9%	42.5% (76)	41.5% (158)	−1.0%
Buy food from fast food shops	71.2% (272)	62.8% (278)	−8.4%** (p=0.010)	64.1% (41)	70.4% (38)	+6.3%	84.3% (268)	81.9% (262)	−2.4%	78.3% (141)	76.8% (292)	−1.5%
Dietary behaviour (7 days preceding the survey)												
Ate crisp four times or above	19.1% (74)	12.6% (57)	−6.5%** (p=0.010)	12.3% (8)	8.9% (5)	−3.4%	16.5% (53)	10.5% (34)	−6.0%** (p=0.025)	11.0% (20)	10.2% (39)	−0.8%
Ate chocolates four times or above	29.8% (115)	22.4% (100)	−7.4%** (p=0.015)	24.6% (16)	10.9% (6)	−13.7%	33.6% (109)	23.8% (77)	−9.8%** (p=0.005)	30.2% (55)	36.8% (136)	+6.6%
Ate preserved food four times or above	13.0% (50)	10.5% (47)	−2.5%	12.3% (8)	19.6% (11)	+7.3%	6.2% (20)	6.8% (22)	+0.6%	11.0% (20)	8.3% (32)	−2.7%

**p<0.05.

Table 3 Antisocial behaviour changes of students between awarded and non-awarded schools at baseline and two years after intervention

Grade	Primary 4						Secondary 3					
Award	Award			Non-award			Award			Non-award		
Before/after	Before	After	Δ%	Before	After	Δ%	Before	After	Δ%	Before	After	Δ%
Antisocial behaviours (12 months preceding the survey)												
In a physical fight	16.9% (65)	11.5% (52)	−5.4%** (p=0.024)	7.7% (5)	16.4% (9)	+8.7%	18.6% (60)	16.5% (54)	−2.1%	12.6% (23)	11.4% (44)	−1.2%
Injured in a physical fight and had to be treated by a doctor or nurse	2.6% (10)	5.3% (24)	+2.7%** (p=0.049)	0.0% (0)	1.8% (1)	+1.8%	4.0% (13)	5.5% (18)	+1.5%	3.3% (6)	2.6% (10)	−0.7%
Property stolen or damaged	37.3% (144)	23.3% (106)	−14.0%** (p=0.000)	18.5% (12)	19.6% (11)	+1.1%	25.8% (83)	16.9% (55)	−8.9%** (p=0.006)	25.7% (47)	19.2% (74)	−6.5%

**p<0.05.

The proportion of primary and secondary students eating crisps and chocolate four times or more over the past week decreased significantly among students in schools with the award (−7.4% for primary students p = 0.015, −6% for secondary students p = 0.025). The trend was not shown to be statistically significant and was reversed for secondary students in schools without awards (table 2). The proportion of primary students having street snacks four times in a week decreased significantly from 21.1% to 12.2% (p<0.001) in primary schools with award while those schools without award showed an increase from 15.6% to 24.1% (table 2).

Among the award schools, the proportion of primary students using dietary practices to lose weight increased after implementation of HKHSA significantly (33.6% to 41% p = 0.029) in contrast with a decrease among schools without awards (44.6% to 35.4%). The trend was reversed for secondary students with a decrease in schools with awards (43.9% to 32.1% p = 0.002) after implementation of HKHSA. The proportion of secondary schools students reporting being overweight showed a significant decrease among those students from award schools (46.4% to 37.2% p = 0.017).

School violent and antisocial behaviours

Table 3 shows a significant decrease in the proportion of primary and secondary students with property stolen or damaged from the award schools (−14% p<0.0001, −8.9% p = 0.006 respectively) but not in schools without awards. The proportion of P4 students involved in physical fights decreased significantly (−5.4% p = 0.024) in schools that attained awards, while an increasing trend was seen in schools without awards (+8.7%).

Mental health and substance misuse

Both primary and secondary students from schools with awards had a significant increase in life satisfaction score (LIFE), +1.55 (p = 0.008) and +1.26 (p = 0.018) respectively (table 4). The proportion of primary students with self harm behaviours decreased from 15.9% to 9.9% significantly (p = 0.01) in schools with awards but increased in schools without awards (4.6% to 8.9%). The proportion of secondary students feeling hopeless and sad decreased from 32% to 22.9% with significance (p = 0.01) in schools with awards but increased slightly in non-award schools (30.6% to 31.7%) (table 4).

The proportion of students who ever smoked in the past month decreased among those schools with awards with statistical significance in primary schools (table 4). The proportion of students who had ever drunk alcohol in the past month increased in both the award and non-award schools with greater increase in the latter (table 4).

DISCUSSION

Those schools that had achieved an award (bronze or silver) had clearly shown that they were adopting the HPS framework to a higher degree than those schools that did not reach award levels. Their students' health related outcomes were better than the non-award schools. All schools were involved in the HPS programme under the guidance of CHEP and this discussion seeks to explore reasons for the differences between those schools achieving high standard of HPS leading to award and those schools that have not yet reached the standard for an award. This would have implications for future HPS interventions.

An analysis of the data shows that the students attending schools with awards had improved their lifestyle in various aspects. They also showed better life satisfaction and emotional status, and reported better health and academic performance. The social development model helps to explain the importance of the concept of HPS in reducing risk factors

Table 4 Changes in mental health status and substance misuse of students between awarded and non-awarded schools at baseline and two years after intervention

Grade	Primary 4						Secondary 3					
Award	Award			Non-award			Award			Non-award		
Before/after	Before	After	Δ%	Before	After	Δ%	Before	After	Δ%	Before	After	Δ%
Mental health												
Life satisfaction score	20.18	21.73	+1.55** (p=0.008)	18.84	20.07	+1.23	16.81	18.07	+1.26** (p=0.018)	17.08	16.66	−0.42
With depression symptom (score ⩾13)	34.3% (116)	28.9% (119)	−5.4%	30.9% (17)	39.2% (20)	+8.3%	46.5% (145)	39.0% (121)	−7.5%	35.4% (62)	45.1% (172)	+9.7%** (p=0.031)
Felt sad or hopeless	24.7% (95)	30.4% (138)	+5.7%	16.9% (11)	30.4% (17)	+13.5%	32.0% (103)	22.9% (74)	−9.1%** (p=0.010)	30.6% (55)	31.7% (122)	+1.1%
Hurt yourself	15.9% (61)	9.9% (45)	−6.0%** (p=0.010)	4.6% (3)	8.9% (5)	+4.3%	19.9% (64)	17.5% (57)	−2.4%	12.2% (22)	16.3% (63)	+4.1%
Behaviour related to smoke, alcohol, drug, and sexual intercourse												
Ever smoked in past month	3.4% (13)	0.4% (2)	−3.0%** (p=0.001)	0.0% (0)	0.0% (0)	0%	20.9% (67)	17.2% (56)	−3.7%	9.4% (17)	11.9% (46)	+2.5%
Ever drunk alcohol in past month	1.0% (4)	10.4% (47)	+9.4%** (p=0.000)	0.0% (0)	18.2% (10)	+18.2%** (p=0.000)	26.7% (86)	30.9% (100)	+4.2%	16.0% (29)	24.8% (95)	+8.8%** (p=0.019)

**p<0.05.

and increasing protective factors for adolescent health and social behaviours.[33] The model hypothesises that children learn from their social environment the patterns of behaviours, social or antisocial. When socialising processes are consistent, a social bond of attachment develops and the social bond inhibits behaviours inconsistent with the beliefs held and behaviours practised by the socialisation unit through establishment of a person's stake in conforming to its norms.[34]

The school and home are the main social environments for children. Social cohesion, exposure to a warm, caring and supportive environment, and positive emotional attachments play critical parts in determining physical and mental health and educational and social outcomes during childhood.[35] The HPS embodies a holistic, whole school approach in which a broad health education curriculum is supported by the deliberate development of the social environment and ethos of the school.[9] This helps to create a supportive environment for healthy development at schools, in the home and in the community.

Through reviewing the school health profile in the six key areas (appendix 1, available on line http://www.jech.com/supplemental), it was found that those schools without awards had fallen short in certain criteria in comparison with those schools with award. Their school health policies were found to lack comprehensiveness. They needed further development in staff health education training, health promotion activities for family members, management of health education resources and broader coverage of health content in their school health education curriculum. They were less successful than award schools in creating a friendly and safe school environment and also building a healthy eating environment. Family and community involvement in school activities could be strengthened and schools could be more proactive in linking with other schools and communities.

Those schools with awards clearly showed more commitment to a whole school approach towards health—that is, the HPS approach. This was reflected in the greater reduction of health risk behaviours, including antisocial behaviours, and greater improvement in emotional wellbeing. It has been shown that schools using the HPS approach successfully, improve the development of student resilience, build important protective factors for students' health and wellbeing and create an overall social environment in the school that is supportive in achieving these outcomes.[36]

The findings of this study add further evidence to previous studies suggesting that the concept of a whole school approach, such as HPS, in tackling health and social issues, would improve learning outcomes.[7 37–39] The evidence suggests better learning outcomes are achieved if students have higher satisfaction with life.[40 41] Results from this study show higher life satisfaction among award schools, and therefore

What does this paper add?

The concept of Health Promoting Schools provides a more comprehensive and strategic planning framework to promote holistic health of students and moves beyond individual behavioural change to consider organisational structure change such as improving the school's physical and social environments, health skills, and knowledge acquisitions. This paper analysed whether schools implementing the concept of HPS successfully had a better impact on the health and wellbeing of their students than schools not implementing the HPS as widely. The results contribute further evidence on the effectiveness of Health Promoting School.

Policy implication

The results suggest that becoming a HPS in a comprehensive way can make a difference to certain behaviours and self reported health and academic status. The results are useful for governments, schools and non-government organisations (NGOs), to identify effective approaches to building the health and wellbeing, and ultimately, educational outcomes of the students.

these schools are likely to be better places to improve learning outcomes than those schools without awards.

Fast food consumption has increased greatly among children in recent years, in tandem with the obesity epidemic.[42] Fast food tends to increase energy intake and for this reason, may result in weight gain.[43] It is therefore encouraging to observe the significant reduction of street snacks, crisps, and chocolates among the students in schools attaining award. The data of the students survey in 2001 showed, that among primary students, 73% had less than two servings of fruits and 80% had less than three servings of vegetables. For secondary students, 84% had less than two servings of fruits and 90% had less than three servings of vegetables.[27] The unhealthy eating habits among all schools were serious but less among the award schools. The eating habits of students in the award schools were better than the average found by another study amongst Hong Kong students.[28]

An interesting finding in this study was the decline in the consumption of fruits and vegetables. It has been shown by another Hong Kong study on nutrition that attitudes towards health worsened as young people grow older but this trend was much less among schools with student based nutrition intervention programmes.[44] In this study the decline in fruit and vegetable consumption was also less among schools with awards.

The increasing proportion of primary students adopting the ''healthy eating'' approach to control weight seems to be a positive phenomenon found in those HPS with awards. For secondary students from schools with an award, the proportion of students to lose weight through dieting decreased. This might mean that they are comfortable with their weight or use correct weight managing techniques. Fewer secondary students from the schools with awards reported themselves as overweight. This could be attributable to a better understanding of the concepts of weight and body images rather than following the fashion of slimming that is promoted through the media, particularly to girls. More results are needed to explore this issue.

The significant decreased proportion of students reporting academic standards as being only fair or poor among schools with an award, further suggests that health outcomes influence learning outcomes. The findings of this paper further adds strength to the proposal by St Leger and Nutbeam that the HPS contributes to the four school related outcomes.[39] They argued that these are the building blocks necessary to achieve better educational outcomes. This study found that among the schools with healthy school awards, students reported better health status and academic standards, a lower prevalence of emotional problems, fewer episodes of unacceptable social behaviours, improved eating habits, and increased satisfaction with life. All these factors are fundamental to improve the core business of schools—that is, maximising learning outcomes.

There are some limitations in this paper. There were no control schools for comparison. It is difficult to shield schools from community wide health promotion initiatives, safety, tobacco reduction, etc. Nor is it ethical and feasible to deprive students of basic health information. Instead the schools were divided into two groups; one group with awards and the other group without awards because the purpose of the study was to see if schools undertaking comprehensive health programmes as identified in the HPS framework, perform better in terms of student health and education outcomes.

CONCLUSION

The HKHSA emphasises the combined efforts of education and health professionals to enable the HPS programme to be more comprehensive and ensuring HPS work is connected with school outcomes.[45] This study shows that there are some promising changes occurring among the students from award schools. The findings suggest that if the HPS framework is embraced comprehensively, then it is highly probable that there will be substantial gains in health and educational outcomes.

The findings also highlight the importance of healthy policies, empowerment, capacity building, creating supportive environments and partnerships to implement the HPS successfully. These findings add to earlier studies suggesting that the HPS provides a framework and strategic focus to improve the health and wellbeing outcomes of students.[5 7]

ACKNOWLEDGEMENTS

The authors thank the Hong Kong Healthy Schools Award Team in assisting the schools to implement the concept of HPS, and the schools participating in the scheme.

The appendix is available on line (http://www.jech.com.supplemental).

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Funding: support was received from the Quality Education Fund of the Hong Kong Government of Special Administrative Region.

Competing interests: none declared.

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