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Introducing KiVa School-Based Antibullying Programme to the UK; A Preliminary Examination of Effectiveness and Programme Cost

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Abstract

Bullying is an internationally recognised problem and school based bullying is particularly pervasive. KiVa is a robustly evidenced school-based antibullying programme developed and evaluated at Turku University, Finland, and subsequently disseminated across Finland. Following a positive UK trial of Unit 2 (for 10-12 year olds), further UK dissemination has taken place. This study presents (a) pupil self-reported levels of victimisation and bullying prior to, and after, one year of KiVa implementation (Units 1 and 2) with 7-11 year olds from 41 schools, and (b) programme training and delivery costs. Data from 41 primary schools were analysed using a linear mixed model effects analysis. Results revealed statistically significant reductions in victimisation and bullying after one year of programme implementation. Ongoing costs were small, at £2.84 per Key Stage 2 pupil per annum. These promising results highlight the need for further more rigorous evaluation of KiVa in the UK, including the exploration of factors associated with effective implementation, and the importance for educators and policy makers of evaluating both impact and costs when implementing programmes to prevent and reduce bullying.

Keywords: School-based, bullying, KiVa, evaluation, pragmatic.

The prevalence and adverse effects of bullying are of major international concern (Smith, 2014; Hymel & Swearer, 2015). School-based bullying is particularly pervasive (Ansary, Elias, Greene, & Green, 2015). Approximately one in ten children worldwide report frequent bullying (Chester et al., 2015; Currie, Zanotti, Morgan, & Currie, 2012). Furthermore most children regularly witness bullying at school (Aboud & Miller, 2007; Cuadrado-Gordillo, 2012).

Repeated exposure to bullying has longer-term consequences for health, social, and emotional wellbeing (Juvonen & Graham, 2014). Child victims are more likely to develop anxiety disorders, depression, and internalising problems (Zwierzynska, Wolke, & Lereya, 2013) that persist into adulthood (Copeland, Wolke, Angold, & Costello, 2013; Reijntjes, Kamphuis, Prinzie, & Telch, 2010) including self-harm (Lereya et al., 2013), suicidal thoughts and even suicide (Burgess, Garbarino, & Carlson, 2006; Klomek, Marrocco, Kleinman, Schonfeld, & Gould, 2007). There is increased risk of dropping out of education (Cornell, Gregory, Huang, & Fan, 2013), school absenteeism (Brown, Clery, & Ferguson, 2011), and low academic achievement (Arseneault, Bowes, & Shakoor, 2010; Nakamoto & Schwartz, 2010) with cumulative, long-term effects on the victim's lifetime earning potential (Brown & Taylor, 2008). Bullying is costly for victims, their families, schools, society and multiple agencies including health, criminal justice, education, and social services (Roberts et al., 2004). Although the adverse consequences of bullying are well established, evidence on school-based intervention effectiveness is limited and of mixed quality and knowledge of the costs/cost-effectiveness of antibullying programmes is minimal (Hummel et al., 2009).

Blueprints for Violence Prevention is a register of strongly evidence based programmes to aid policy and practice. It promotes prevention and intervention programmes for health and wellbeing of children. It has reviewed over 1,500 programmes, with less than 5 percent being designated as model or promising programmes. Only three anti-bullying programmes, the Olweus Program, Steps to Respect, and KiVa have met the “*Promising*” Blueprint criteria (<https://www.blueprintsprograms.org>).

Olweus was commissioned by the Norwegian Ministry of Education, to design and evaluate an intervention to prevent bullying, the ‘Olweus Bullying Prevention Programme’. The programme targets pupils age 5-18 years, aiming to improve the school culture, defining rules, conducting activities, and providing a sense of community and reducing opportunities for bullying behaviour. Programme implementation has been associated with reductions in self-reported bullying, victimisation, anti-social behaviour, including truancy, alcohol use, theft, and vandalism (Olweus, 1991; Olweus, 2005; Olweus, Limber, & Mihalic, 1999). It has since been implemented in many countries and mostly demonstrated positive, although more modest, effects than the original study (Olweus et al., 1999; Smith, Schneider, Smith, & Ananiadou, 2004).

Steps to Respect increases staff awareness and responsiveness and teaches pupils social emotional skills, how to foster socially responsible beliefs via staff training and an annual 14 week one hour a week curriculum for pupils aged 5-11 years. An initial RCT demonstrated higher rates of responsibility to intervene and decreased observed bullying and argumentative behaviour (Frey et al., 2005).

KiVa, a universal school-based antibullying programme, was developed at Turku University, Finland, for children aged 7 to 15 years (the age range in Finnish comprehensive schools) by Salmivalli and colleagues (<http://www.kivaprogram.net/>). KiVa is based on extensive research showing that victims report distress when bystanders do not help, and that bullies tend to behave aggressively to attain higher status and are reinforced by onlookers' apathy or encouragement. When bystanders intervene, bullying tends to stop (Salmivalli, Kärnä, & Poskiparta, 2011). KiVa teaches children to recognise and respond appropriately to bullying.

KiVa comprises a whole school curriculum and a targeted intervention implemented when bullying is identified. Features that differentiate it from other antibullying programmes include (i) concrete materials for pupils, teachers, and parents, (ii) a virtual learning environment to reinforce learning, and (iii) exercises to enhance empathy, self-efficacy, and support victimised peers. Other programmes share features with KiVa but without a multi-layered whole-school approach (Blueprints, 2018). KiVa was piloted and evaluated in Finland in a randomised controlled trial (RCT) in 234 schools. The first phase (2007-2008 with 8000+ pupils, aged 10-12 years in Grades 4-6 in 78 schools) demonstrated significant reductions in pupil reported bullying and victimisation after one academic year (Kärnä et al., 2011). Reductions occurred in all nine forms of bullying examined (including physical, verbal, and cyber-victimisation; Salmivalli, Kärnä, & Poskiparta, 2011). In phase two (2008-2009 with children aged 7-15 years, Grades 1-9) victimisation and bullying reduced by approximately a third for intervention schools. Increased empathy and self-efficacy in

supporting and defending victims, and reductions in bully reinforcing behaviour were also reported (Salmivalli & Poskiparta, 2012). Furthermore, anxiety and depression decreased, peer perceptions improved (Williford et al., 2012) and school liking, academic motivation, and performance increased (Salmivalli, Garandeanu, & Veenestra, 2012).

Following the successful RCT, the Finnish Government funded a national roll out, and KiVa is now delivered in over 90% of Finnish comprehensive schools (2,700 schools). The roll-out demonstrated significant, although smaller, positive effects on victimisation and bullying than the initial RCT (Kärnä et al., 2011a) and annual pupil survey data continues to show further year-on-year reductions in reported bullying and victimisation. Currently, Salmivalli and team are exploring implementation factors. Evaluations are ongoing in Chile, Estonia, Greece, Italy, South Africa, the Netherlands, the UK, and the US (<http://www.kivaprogram.net/around-the-world>). An Italian RCT with 2000+ participants, aged 8 to 11 years old reported the odds of control school pupils being victimised was 1.93 times higher than intervention pupils (Nocentini & Menesini, 2016).

UK

In 2011, the Welsh Government included KiVa among 'well evaluated' programmes that were eligible for Behaviour Management training grants. Fourteen Welsh primary schools accessed funding and, with three Cheshire schools, participated in a pilot trial (Hutchings & Clarkson, 2015). In 2011, only Unit 2 lesson curriculum (pupils 10-12 years) was available in English, because this age group had showed the

best results in Finland (Kärnä et al., 2011). One year pre- to post-intervention results from the online pupil survey showed statistically significant reductions in victimisation (16% to 9%) and bullying (6% to 2%) that were maintained at two year follow-up (Pritchard, 2016). Teachers reported high levels of pupil engagement and enthusiasm, and positive impact on children's wellbeing, pro-social behaviour, and class and playground atmosphere (Hutchings & Clarkson, 2015). A pilot RCT in 20 schools in Wales (Clarkson et al., 2016) is currently being analysed and identifies a number of fidelity issues to be addressed.

Tackling school-based bullying is a priority (e.g. Children's Commissioner for Wales: a Plan for all Children and Young People 2016-9). In 2015 the Children's Early Intervention Trust (CEIT) was licensed to train primary schools staff across the UK using Units 1 and 2 covering the age range 7-12 years, Key Stage 2 (KS2) in UK primary schools.

KiVa training involves two staff, ideally the head/deputy head teacher and a KS2 teacher, attending a two-day training, covering KiVa's theoretical foundations, evidence, and resources. Participants practice lessons; access online materials, including the child survey; learn strategies for tackling bullying; and discuss programme launch and how to sustain effective implementation in their school. Seventy-three schools have been trained, of which 41 have so far completed one year of delivery. This study reports on the baseline and outcomes from the online KiVa pupil survey after one year and programme implementation costs.

Local authorities/schools need information on the cost implications of spending decisions and there is no evidence of the costs/cost-effectiveness of any UK delivered school-based antibullying intervention. One study (Beckman & Svensson, 2015) costed the Olweus Bullying Prevention Programme (OBPP) in a Swedish secondary school reporting net monetary benefit of 17,500 Swedish krona (€1,935) (Beckman & Svensson, 2015) and a cost effectiveness study of KiVa in Sweden (Persson et al., 2018), using a Markov model, estimated a base-case cost per Quality Adjusted Life Year (QALY) of €13,823, which may be considered cost-effective as it is below the Swedish threshold of €50,000 per QALY.

The current paper reports the micro-costing of KiVa in the first year. Micro-costing is widely used in economic evaluations of public health interventions including parenting programmes (e.g. Tarricone, 2006; Charles, Edwards, Bywater, & Hutchings, 2013; Xu, Nardini, & Ruger, 2014; Edwards et al., 2016).

Methods

Design

This was an opportunistic evaluation of data from early-implementer schools reporting baseline characteristics, with an uncontrolled pre-post-test design to explore outcomes from the first 41 schools to complete one year of delivery. Such designs can determine whether anticipated effects are present, and provide evidence to inform sample size calculations for more rigorous RCTs (Flay et al., 2005). The independent variable (IV) was time. The two pre- to post-test dependent variables (DV) were victimisation (reported victim status) and bullying (reported perpetrator status).

Data Source and Procedure

All KiVa school pupils complete an annual anonymous online survey measuring bullying and victimisation, which includes the global items from the Olweus Bullying Victim Questionnaire (Olweus, 1996). A baseline survey is administered during the summer term (June/July) before launching KiVa in the following academic year. The survey is administered by teachers/teaching assistants and repeated annually.

Registered schools receive their own survey data and aggregated data for other national schools that have been implementing the programme for the same length of time, for example all schools that have implemented the programme for one year. Licensed partners received national data. The data reported in this study were extracted from the UK partner database.

Units 1 (7-9 years) and 2 (10-12 years) were available in English, enabling schools to introduce KiVa simultaneously across KS2. Ethical approval was granted from the School of Psychology, Research Ethics and Governance Committee, Bangor University (Application number: 2015-15639).

Intervention

Following extensive training in Finland, CEIT was licensed as the UK KiVa training hub. Training for schools involves two school based staff attending a two day course. The programme is then introduced to the rest of the school staff by the trained teachers and launched at the start of the academic year. Universal actions include lessons with large and small group discussions, role play and video material that develop KiVa rules. Lessons begin with general topics, being in a team, exploring

diversity and respect for everyone, and progress to how to recognise bullying, support victims and stand against bullying. There are 10 monthly 90-minute lessons, generally delivered fortnightly as 20 x 45 minute lessons throughout the year. Lessons cover at least 50% of the mandatory Welsh Personal and Social Education (PSE) and non-statutory English Personal, Social and Health Education (PSHE) curriculum. The programme includes online games that can be played at home or at school, PowerPoint presentations for parents' evenings, staff training, and resources for lesson delivery. School-wide posters are displayed and teachers/school-based support staff wear high-visibility KiVa tabards during break supervision. Indicated actions, triggered whenever there is a confirmed case of bullying, have a protocol and scripts to address bullying cases.

Fidelity

The training and support offered by the UK Hub includes assistance with launches, action plans, and maintenance of the programme. Resources for school-based lesson implementation fidelity can be assessed through the online Lesson Record Book, which captures: dose (number and length of lessons delivered), adherence (delivery of intervention activities), and quality (using lesson preparation time and pupil engagement as a proxy). School actions can be monitored using the manual checklist and bullying cases and strategies used can be monitored via the indicated action paperwork and interpretation of the annual pupil online survey results. These resources are provided to schools during training and fidelity but their use is currently not monitored.

Measure

Victimisation and bullying were measured by responses to the KiVa online pupil survey. This incorporates two global items from the Revised Olweus' Bully/Victim Questionnaire (OBVQ; Olweus, 1996). Pupils are asked "*How often have you been bullied at school in the last couple of months?*" and "*How often have you bullied others at school in the last couple of months?*" These are referred to as 'victimisation' and 'bullying' respectively. The Revised OBVQ has been used to measure victimisation and bullying in several large-scale studies (e.g. Currie, Zanotti, Morgan, & Currie, 2012). Pupils respond on a 5-point scale (1= "*I have not been bullied/have not bullied during last couple of months*" to 5= "*Several times a week*"). Two versions of the data were analysed: children's raw continuous responses and data dichotomised with a response of "*2 or 3 times a month*" (response 3) or more as evidence of victimisation/bullying and less than three as absence of victimisation/bullying, as recommended by Solberg and Olweus (2003). Data has extensively been reported in this dichotomised format in many studies (e.g. Kärnä et al., 2011; Roberts et al., 2004).

Data Analysis

Pre-intervention baseline and one-year post-intervention data were analysed using linear mixed effects models, using the lme4 package (Bates, Maechler, Bolker, & Walker, 2015) for R (R Core Team, 2016). This was chosen to account for nesting of data within schools, which would otherwise violate the assumption of independence made by standard regression methods. For continuous data, models were fitted using the *lmer* function with a fixed effect of timepoint (pre- or post-intervention) and random

intercepts and slopes of timepoint for each school (Barr, Levy, Scheepers, & Tily, 2013). For dichotomised data, models were fitted using the *glmer* function with the 'family' parameter set to 'binomial', but otherwise had the same structure as models fitted to continuous data. These 'full' models were compared to 'null' models with the same random effects structure but without the fixed effect of timepoint, using Aikake Information Criteria (AIC) and likelihood ratio tests. For continuous data, the *lme.dscore* function from the EMAtools package (Kleiman, 2017) for R was used to estimate Cohen's *ds* and for dichotomized data coefficients were exponentiated to produce odds ratios (OR). Full models were also compared to models without the random slopes of timepoint using likelihood ratio tests, to assess whether significant heterogeneity existed between schools.

Micro-costing

Programme costs (Charles, Edwards, Bywater, & Hutchings, 2013) in British Pound Sterling (GBP) were calculated for the year 2013-4 from the perspective of the schools and local authorities. The KiVa training hub provided the costs of materials, training, and support. KiVa coordinators recorded time spent coordinating, implementing, and administering KiVa. Key Stage 2 teachers in 11 schools completed online lesson records, reporting time spent preparing and delivering KiVa lessons.

Costs were separated into recurrent, delivery and support costs, and non-recurrent costs, training and initial set-up costs. KiVa activities were undertaken during usual school hours and linked with other pre-arranged activities (e.g., launching KiVa with parent/carers during a regular parents' evening), avoiding the need for additional

overheads (e.g. heating and lighting). Time spent completing cost-diaries was excluded as this was additional to KiVa delivery costs.

Teacher costs were based on national average salaries for a qualified classroom teacher (M5) (National Association of Schoolmasters Union of Women Teachers, (NASUWT), 2015). National average salaries were also applied for head teachers (Pay Scale Group 6) (NASUWT, 2015). Teaching assistant costs were based on national average salary estimates provided by the National Careers Service UK (£15,500 per year). Salary costs were sense checked with school staff. A 39-week school year was used to calculate cost-per-hour for school staff. Salary calculations included employers' on-costs (25%) of national insurance, pensions, annual increments and allowances. Average total cost per pupil was calculated.

Results

Victim and Bully Results

Characteristics of the 41 schools/pupils are illustrated in Table 1. The England/Wales split was fairly even, as was gender. Participants were less socioeconomically disadvantaged than the population at large, as indicated by free school meals eligibility, a common method for measuring socioeconomic deprivation in the UK (English national average 15.2%, trial schools average 7%; Welsh national average 20.1%, trial schools average 12.6%).

Victim scale responses revealed reductions from pre- to post-test, across all 4 levels of victimisation (responses 2-5), with an increase in no victimisation responses.

Using the dichotomised cut-off, the percentage of pupils reporting victimisation at pre-test (18.1%) reduced at post-test to 15.7%, a 13.3% reduction.

The full model fitted to continuous victimisation data was a better fit than the null model (AIC: 22249.38 vs 22253.82; $X^2_1=6.4443$, $p=.011$), indicating that the fall in victimisation from baseline to follow-up was statistically significant ($B=-.08$, $\sigma_B=.030$, $t=-2.68$, $d=-.99$; Intercept=1.703 $\sigma_A=.033$, $t=51.16$). The likelihood ratio test between the full model and the model without random slopes of timepoint was not significant ($X^2_2=3.6754$, $p=.1592$), indicating a lack of heterogeneity across schools.

The full model fitted to the dichotomised version of victimisation data also outperformed the null model (AIC: 6575.652 vs 6579.950; $X^2_1= 6.298$, $p=.012$), again indicating that the fall in victimisation from baseline to follow-up was statistically significant ($B=-.195$, $\sigma_B=.074$, $z=-2.64$, OR=.79 [.58-1.07]; Intercept=1.520 $\sigma_A=.073$, $z=-20.59$). The likelihood ratio test between the full model and the model without random slopes of timepoint was not significant ($X^2_2=1.9031$, $p=.3861$), indicating a lack of heterogeneity across schools.

The full model fitted to continuous bullying data was a better fit than the null model (AIC: 14205.58 vs 14210.50, $X^2_1= 6.92$, $p<.001$), indicating that the fall in bullying from baseline to follow-up was statistically significant ($B=-.057$, $\sigma_B=.021$, $t=2.78$; Intercept=1.255 $\sigma_A=.022$, $t=57.11$, $d=.97$). The likelihood ratio test between the full model and the model without random slopes of timepoint was significant ($X^2_2=9.9691$, $p=.0068$), indicating heterogeneity in KiVa's effect across schools.

Table 1: Characteristics of schools/pupils in 41 pre- and post-test schools.

<i>School</i>		<i>Pre-test</i> <i>n=41*</i>	<i>Post-test</i> <i>n=41*</i>
<i>Location</i>	Wales	22 (53.7)	22 (53.7)
	England	19 (46.3)	19 (46.3)
<i>School population</i>	Whole-school**	7675	7586
	Key stage 2***	4090	4058
	Response rate ¹	3720 (91)	3612 (89)
<i>Pupil</i>		<i>Pre-test</i> <i>n=3720</i>	<i>Post-test</i> <i>n=3612</i>
<i>Gender</i>	Female	1922 (51.7)	1876 (51.9)
	Male	1798 (48.3)	1736 (48.1)
<i>Free School Meals Percentage (FSM%)²</i>	Welsh	12.6	12.6
	English	7.0	7.0
<i>Academic Year Group</i>	Year 3	1046 (28.1)	926 (25.6)
	Year 4	956 (25.7)	991 (27.4)
	Year 5	953 (25.6)	837 (23.2)
	Year 6	765 (20.6)	858 (23.8)
<i>Ethnic Minority</i>	Welsh	4.8	4.8
	English	16.9	16.9
<i>Victim Scale (%)</i>	1	65.0	69.2
	2	17.2	15.1
	3	7.8	6.2
	4	5.5	5.1
	5	4.9	4.4
	Victim status ³	18.1	15.7
<i>Bully Scale (%)</i>	1	85.3	89.2
	2	9.8	6.7
	3	2.2	1.9
	4	1.8	1.4
	5	0.9	0.9
	Bully status ³	4.9	4.2

Note. * Percentages are in parentheses ** Mean school population of 196 pupils *** Mean KS2 population of 100 pupils ¹ Percentage response rate calculated using KS2 population ² Welsh national average FSM 2016=20.1; English national average FSM 2016=15.2 ³Status created by using the dichotomised cut-off point

The full model fitted to the dichomised version of the bullying data did not outperform the null model (AIC: 2667.134 vs 2667.275, $X^2_1=2.141$, $p=.1433$, OR=.79[.58-1.08]). The likelihood ratio test between the full model and the model without random slopes of timepoint was significant ($X^2_2=6.4826$, $p=.03911$), indicating heterogeneity in KiVa's effect across schools.

Micro-costing Results

The average cost to set up and deliver KiVa in the first year, for a one form entry school, approximately 120 KS2 pupils, was £1,960.84 per school, equating to £16.34 per KS2 pupil (Table 2). Set-up costs accounted for 82% of first year costs with a total non-recurrent cost of £1,560.52 per school (£13.00 per KS2 pupil). Recurrent costs in the first year amounted to £400.32 per school (£3.34 per KS2 pupil). The recurrent cost reduces to £2.84 per pupil in subsequent years, due to a decrease in the annual registration fee from £2.50 in the first year to £2.00 in subsequent years.

Cost Considerations

The main cost of programme setup is included in Table 2. Since KiVa covers over 50% of the Welsh PSE/English PSHE curriculum, a lot of KiVa lesson time probably replaces time which would otherwise be spent in other PSE/PSHE activities. We acknowledge there is an opportunity cost to KiVa. Opportunity cost is the value of benefits foregone by not using resources in their next best alternative use. KiVa uses existing teacher time, and maps onto PSE/PHSE curricula, resulting in minimal opportunity cost. Resources vary according to school size and numbers and costs of staff requiring training. The training fee for a larger school is spread over a larger

Table 2. Average non-recurrent (initial training and set-up) and recurrent (delivery) costs per school to implement KiVa in the first year based on four classes and approx. 120 pupils[±]

Non-recurrent costs (initial training and set-up with schools)			
Type of Cost	Units	Unit cost	Total costs
Training and Purchase of Initial Materials Costs			
Training course	One-off two-day training course lasting 12 hours	£600 including 2 KiVa manuals	£600
KiVa manual	Unit 1 and 2 manuals required to deliver KiVa	£50 per manual for each KS2 teacher average 4 KS2 classes per school requiring 2 additional manuals	£100
Posters and tabards	Set of 6 posters and 4 tabards	£45 for the set	£45
Staff costs for 2 staff members (typically 1 teacher and 1 head teacher) to attend training	One-off two-day training course 12 hours, plus average travel time of 87 minutes per round trip	807 minutes x £0.39 = 314.73 [teacher] 807 minutes x £0.57 = 459.99 [head teacher]	£774.72
Travel costs to attend training	102 miles (average two round trips)	102 miles x 40p per mile	£40.80
Other activities to Launch KiVa in Schools			
Staff meeting: A staff meeting lasting 80 minutes on average led by the KiVa coordinator			£0*
Launch with pupils: A launch meeting with pupils took staff 84 minutes on average			
Parents' evening: A parents' KiVa launch evening took an average 70 minutes			
Newsletters to parents explaining KiVa: 52 minutes to prepare, print and distribute			
<i>Sub-total</i>			<i>£1,560.52</i>
Recurrent costs			
KiVa delivery costs			
School registration fee	Annual registration with KiVa Finland	£2.50 per KS2 pupil for year 1 (120 pupils x £2.50) £2 per pupil for subsequent years	£300
Teacher lesson preparation time	20 minutes median time per lesson	200 minutes to prepare 10 lessons	£0*
Teacher lesson delivery	90 minutes on average per KiVa lesson	900 minutes to deliver 10 KiVa lessons	£0*
KiVa pupil online survey teaching assistant time	83 minutes to complete online survey with one class – 2 groups of 15 pupils each time	(83 x £0.17) x 4 classes	£56.44
Other KiVa coordinator time (teacher)	112.5 minutes on average conducting KiVa assemblies, creating game passwords, contacting KiVa trainers and answering staff queries	112.5 minutes x £0.39 [teacher]	£43.88
<i>Sub-total</i>			<i>£400.32</i>
Total setup and delivery cost per school, per year for first year of implementation (£1,560.52+400.32) = £1,960.84			
Total setup and initial delivery cost per pupil (£1960.84/ 120 pupils) = £16.34			

Note. * indicates activity was undertaken as part of contractual "usual" hours Note. ± indicates KiVa uses existing teacher time, and maps onto PSE/PHSE curricula, resulting in minimal opportunity cost. Therefore, we acknowledge opportunity costs, but did not incorporate in this micro-costing, as opportunity costs were minimal.

number of pupils however every KS2 class teacher requires a manual (£50) and the annual registration fee is based on KS2 pupil numbers. Tabards and posters cost £45 per 200 pupils. Survey administration and time spent by the KiVa co-ordinator depend on school size, but for school PSE/PSHE co-ordinators this may form part of their regular commitment. Costs of photocopying and resources tended to be absorbed into general school running costs.

Discussion

The present study examined the effectiveness and costs of the pragmatic roll-out of KiVa in a UK context and provides preliminary pupil self-report evidence that KiVa, delivered across KS2 in 41 schools, significantly reduced victimisation and bullying. The findings must be treated with caution due to the lack of control group. However the lack of evidence for heterogeneity in KiVa's effect across schools in terms of reported victimisation, suggests that differences in implementation of KiVa across schools is not resulting in substantial variability in effect size, although significant heterogeneity was found for reported bullying levels. Reductions were smaller than those reported in the Welsh pilot (Hutchings & Clarkson, 2015), but are valuable as they show significant findings from an opportunistic evaluation of implementation in schools that opted to implement the programme. The findings support the earlier Welsh pilot results and the KiVa annual monitoring system will permit ongoing follow-up of the 41 schools and of the other schools that have since adopted the programme.

Schools received no supervision/support and only minimal real-world implementation support from CEIT, the KiVa UK Hub. This is likely to have resulted in

reduced adherence to programme fidelity and variable quantity and quality of lesson delivery and strategies as was also found in the Olweus programme (Mihalic et al., 2002). Addressing bullying is complex and adequate training is required to ensure that teachers deal with problem behaviours effectively. Adherence tools are currently being developed for inclusion in training to aid fidelity in terms of ensuring delivery of key programme content and should be integrated into future implementation support.

The paper includes the first micro-costing of KiVa in a UK context, providing schools and local authorities with information on resources required for, and costs of, delivery, adding to the limited international evidence on antibullying programme costs. The micro-costing demonstrated an average cost of £1,960.84 per school (£16.34 per KS2 pupil) to set up and deliver KiVa in the first year. However, this reduced to £2.84 per pupil per annum in subsequent years due to the reduced annual registration fee from year 2. Precise costs depend on school size, local training, and support arrangements.

Limitations

There are a number of limitations due to the design, an uncontrolled repeated measures study, making cause-effect conclusions tentative. An RCT, with a sample calculated on these findings would require 100+ schools (with national average class size and single form entry) and is needed to provide robust empirical evidence concerning programme effectiveness.

Our sample of schools is not necessarily representative of UK primary schools, they were relatively advantaged as measured by free school meals rates and they proactively sought and paid for training, resources, and registration.

Our opportunistic study did not have programme delivery fidelity measures. The programme requires implementation monitoring tools for schools to support adherence to intervention set guidelines and delivery procedures. Measures to enable schools to monitor programme fidelity in the UK are currently being developed and would provide an insight into the challenges of delivery, and the variation in effectiveness across classes and between schools. Undertaking rigorous studies in school settings is challenging with numerous potential confounds, and fidelity measures would be valuable both to guide schools in implementation and for researchers. That said, we did assess the degree of heterogeneity in effect size between schools by comparing models with and without random slopes of timepoint. There was evidence of heterogeneity in the bullying measure, but not in the victimisation measure. Given that fidelity problems would likely drive heterogeneity in effect sizes across schools, this finding is consistent with KiVa being applied relatively consistently across schools.

Few studies include a micro-costing. Cost and outcomes are of increasing importance to school managers in times of funding restrictions and it would be beneficial to undertake a cost-effectiveness element (Beckman & Svensson, 2015). Schools should also be aware of opportunity costs of KiVa compared to alternative activities.

The study only considered short-term (one-year) effects. Further data will accumulate from schools that continue to implement KiVa, and with data from newly-registering schools.

Despite limitations the study adds to the bullying intervention literature and provides evidence of programme transportability and effectiveness. A more rigorous scientific evaluation is required before the positive effects reported here can be attributed with confidence to KiVa in the UK.

Future Research

A large scale RCT is needed to confirm the effectiveness of KiVa in the UK, including exploratory analysis of programme effects on different types of bullying and particular groups of children, including age, gender, special educational needs status, and severity of baseline victim/bully status. Future trials should also collect data on teacher-implemented fidelity tools, to monitor programme fidelity. Given the importance of fidelity, practical tools are needed for schools, to promote programme adherence, whilst also permitting researchers to better measure exposure, programme delivery and pupil programme responsiveness. Fidelity tools are currently being developed to be incorporated into resources for schools and an exploration of teacher's perspectives, challenges and programme benefits will contribute to sustained and effective implementation in future KiVa dissemination.

Conclusions

Our findings provide tentative evidence that KiVa reduces victimisation and bullying in UK primary schools for reasonable costs.

The Finnish KiVa roll-out demonstrates year-on-year reductions in bullying and victimisation. A cluster RCT evaluating the impact of KiVa on bullying/victimisation, mental health and school wellbeing, and its cost effectiveness, in the UK is required to aid policy decisions that could significantly reduce short and longer-term consequences and costs of bullying.

Declaration of Conflicting Interests

SC is an accredited KiVa trainer and delivered initial training to some of the schools, this aside there are no other conflicts of interest with respect to the research, authorship, and/or publication of this article.

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