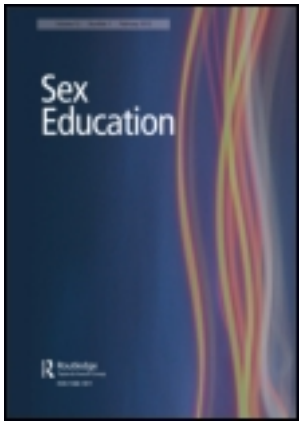

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Impact and cost-effectiveness analysis of the national school-based sexuality education programme in Estonia

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Policy-makers making decisions on the implementation of school-based sexuality education (SE) programmes face two important questions: (1) what are the costs of implementing and scaling up SE programmes, and (2) what are the impacts? This paper responds to these questions by retrospectively assessing costs, impact and cost-effectiveness of the national school-based SE programme in Estonia 1997–2009. The three-year curriculum had been taught to 190,000 students at the end of 2009. The cost of reaching one student was USD 32.90 and the total costs were USD 5.6 million. There has been a remarkable improvement in sexual health indicators in the age groups 15–19 and 20–24 years in Estonia between 2001 and 2009. During this period, annual abortions, STIs and diagnosed HIV infections in the age groups were reduced by 37%, 55% and 89%, respectively. It is difficult to assess to what extent the improvements in these sexual health indicators are attributable to the SE programme. Nevertheless, our conservative threshold analysis indicates that the Estonian SE programme could be considered cost-saving if only 4% of the observed reductions in HIV infections are attributable to the programme. There is strong evidence, therefore, to support that the Estonian school-based sexuality programme has been cost-effective.

Keywords: sexuality education; sexual health; impact; cost-effectiveness; Estonia

Introduction

Policy-makers making decisions on implementation of school-based sexuality education (SE) face two important questions: (1) what are the costs of implementing and scaling up SE programmes, and (2) what are the impacts of these programmes? Knowing the answers to these questions will help them to invest education and health resources more effectively in programmes that deliver better sexual health outcomes for teenagers and young adults, particularly in the context of HIV. This paper responds to these questions by assessing coverage, costs, impacts and cost-effectiveness of the national school-based SE programme in Estonia. The evidence in this study is relevant not only to Estonia but also to other countries considering implementing or scaling up SE programmes. This derives from a larger UNESCO study on cost and cost-effectiveness of school-based SE programmes in six countries (UNESCO 2011).

Estonian SE programme

The Estonian SE programme offers an excellent example of a fully scaled-up countrywide integrated intra-curricular programme at relatively low cost – this may hold important

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lessons for other countries that wish to develop such a programme. The development and adoption of the new sexual education curriculum was facilitated by the fact that, after gaining independence from the Soviet Union, the entire school curriculum had to be renewed, which created a unique opportunity to include this new subject (Haldre, Part, and Ketting 2012). School-based SE was initially developed locally by sexual health NGOs in the early 1990s. It became a mandatory subject in 1996, when a completely new national primary school[1] curriculum was officially adopted. One part of this new curriculum was the subject Human Studies, which included sexuality. The aim of Human Studies was:

> to develop pupils' communication and decision-making skills, promote humanistic values, appreciate one's family and health, and promote motivation to achieve a healthy lifestyle. (Part 2011)

After updating the curriculum in 2002, Human Studies remained compulsory in basic schools (although the number of lessons was reduced). At the same time, the subject became compulsory in gymnasiums and vocational schools. Advocacy for SE, particularly by the Estonian Sexual Health Association, has been an important factor in this process (Ketting, Part, and Haldre 2012).

Implementation of the curriculum took place simultaneously with the introduction of Youth Counselling Centres (YCC), to which it was closely related. The same persons and organisations worked on both innovations, and the impact of these two developments can hardly be separated. The first YCC addressing reproductive and sexual health issues started in 1991 and, by 2010, there were 20 centres (Haldre, Part, and Ketting 2012).

The current Human Studies course includes 35 lessons a year in Grades 5–7, when students are between the ages of 12 and 15 years. Approximately 18% of the course focuses on sexuality. Although other important components (e.g. communication, assertiveness, problem-solving and conflict management) that support young people to develop healthy and equal relationships are also included in the curriculum. Issues such as HIV, STI and pregnancy are integrated across the lessons. The course also includes physical aspects of human reproduction, although in some schools this is covered as part of the biology curriculum. Essential characteristics of the Estonian Human Studies course are that it is as follows:

- *Holistic*. All aspects of human relationships and sexuality are included and no topics are deliberately left out.
- *Positive*. Human sexuality is considered primarily as a source of personal growth and happiness rather than as risky or dangerous, although prevention is included. For example, there are lessons on 'first romantic relationships' and 'happiness'.
- *Integrated*. Sexuality is not dealt with as a separate issue, but as one aspect of growth to adulthood, together with healthy lifestyle, nutrition and physical activity. There is a focus on building general life skills to cope with changes and challenges during adolescence, of which sexuality is only one.
- *Age adapted*. Topics are selected and taught in a manner that is appropriate to the students' age and stage of development.
- *Interactive*. Teachers are encouraged to use a variety of educational tools and methods, aimed at actively involving pupils.
- *Knowledge and values*, *attitudes and skills*. The aim is to develop a 'holistic personality', which requires much more than just transfer of knowledge.
- *Concentric*. The topics are repeated in different grades, allowing the gradual introduction of more in-depth discussion (Ketting, Haldre, and Part 2012).

Implementation of the school-based SE programme has been a gradual process. In an in-depth study, it was concluded that by 2005 the programme was well established (Haldre, Part, and Ketting 2012). The first students started in 1997 and at the end of 2009, 190,000 students had completed the 3-year curriculum.

Methods

Our cost-effectiveness analysis was based on two main components: cost and impact analyses.

Cost analysis

Costs measurements were derived from three sources: (i) an implementation survey, (ii) a review of programme coverage, and (iii) cost analysis. The cost analysis was conducted from the public sector perspective. We carried out an economic analysis, which implies that all forms of resource use were included – paid for or not. Scope of the study was limited to the SBSE programme and therefore YCCs were excluded from the analysis.

School survey

A specially designed school survey was carried out to find out: (1) how the SE programme was implemented, and (2) what the school-level costs were in the school year 2009/2010. There are 481 regular basic schools in Estonia. We grouped the schools into four clusters: schools teaching in Estonian and Russian and schools in rural and urban locations. Then, 161 schools were selected randomly in representative portions from each of the clusters. Web-based questionnaires were emailed to human studies teachers of the selected schools, and 84 schools responded – a sufficient sample size for country-representative results. Results of the survey were used as inputs for the programme costing.

Programme coverage

In the absence of records on the actual number of students reached by the programme, we calculated programme coverage by multiplying the actual number of students in basic schools (The Ministry of Education and Research of the Republic of Estonia 2010) by the proportion of schools implementing the programme (Papp, Part, and Tõrik 2001; Haavio-Mannila, and Kontula 2001).

Programme costs

Initial programme development (1991–1996) or the first programme update (1999–2002) was carried out on an *ad hoc* and largely voluntary basis. In the absense of financial records, costing of these phases was based on interviews with the developers. The cost analysis of other phases was based on detailed inspection of financial records, interviews with SE programme personnel and primary data collection through the schools survey. Historical cost data were adjusted for inflation (The World Bank 2010). All costs are presented at USD 2009 rates. Costs in Estonian kroon were translated to US dollars at a rate of 11.26 (The World Bank 2009). All costs were grouped in five costs categories: teaching salaries, teaching materials, advocacy, training, and operations.

Teaching salary costs included the SE programme-related portion of teachers' gross salaries. The SE programme-related portion was calculated by dividing the annual number of working hours by the annual number of SE-related working hours. This includes the

actual teaching time and preparation of the lessons. Salary levels were obtained from the Ministry of Finance (The Ministry of Finance of the Republic of Estonia 2009).

We calculated annual teaching material costs by combining programme coverage information with the following components. First, we prepared a comprehensive list of available SE materials, including teachers' guides and students' text and exercise books, videos and educational kits in Estonian and Russian. Second, we retrieved information on usage and type of materials used in the schools from the school survey. Third, we collected price information on the most commonly used materials from publishing companies. Fourth, a study showed that 18% of the content of human studies books was related to SE (Fomotskin 2009). Material usage during the earlier stage of the programme was based on interviews with teacher trainers.

Advocacy costs relate to working group meetings, lobbying and efforts to link the SE programme and sexual and reproductive health services provided by the YCCs. Since 1995, student groups have visited the centres, or YCC personnel have given SE lessons in the schools. We categorised the costs of this partnership as part of advocacy expenditure.

Training costs relate to training of master trainers and teachers. Since 1996, 136 new teachers have completed the human studies module in the Universities of Tartu and Tallinn, and 693 teachers have received post-graduate SE training. The human studies SE module costs USD 178 per teacher in the Universities of Tartu and Tallinn in 2009 and the postgraduate SE training on average costs USD 52 per participant (ESHANIHD 2010). Operation costs include salaries of programme personnel, fees for individual consultants, transport, office and computer costs.

We distinguished all costs in three consecutive programme phases: development, update and implementation. The development and update costs include work on the curriculum itself, and advocacy and promotion costs as well. The annual costs of programme implementation include the costs of implementation, plus a share of the programme development and update costs. We assumed a useful life of development costs of 10 years, and of update costs of 5 years, and annualised these costs accordingly. The cost per student reached was selected as the main unit of cost analysis. We defined a student reached as a student who had completed the three-year curriculum. An SE learning hour was defined as 45 minutes of students' time in a classroom. To estimate cost per teacher trained, we considered the total number of trained teachers and total training costs over the whole programme period. We did not consider a single year only, as the number of trained teachers fluctuates considerably over time. Detailed analysis of development, update and implementation costs and the results of the school survey can be found in the main report (UNESCO 2011).

Impact analysis

Health outcome indicators

The Estonian SE programme may have a potential impact on a number of health outcomes. We used three indicators to assess programme impact. First, unintended pregnancies, defined as: (i) in the 15- to 19-year-old age group, all abortions and 50% of births (Estonian Medical Birth Registry 2010); and (ii) in the 20- to 24-year-old age group, all abortions and 10% of births. Results of the latest Estonian Family and Fertility Survey (Estonian University Population Research Centre 2008) indicate that among the youngest cohort studied (born 1979–1983) 36% of all births were unintended, and 37.8% of first births were unintended. International literature indicates that births among women <20 years are much more often unintended than among women >20 years. Births in the age

group of 20–29 years are most often intended. Therefore the above definition of unintended pregnancies should be interpreted as a conservative estimate.

Second, sexually transmitted infections including syphilis, gonorrhoea and chlamydia – which were grouped together as STI cases (Estonian Health Board 2009b). Third, HIV infections, defined as numbers of diagnosed new HIV infections in the 15- to 19-year-old age group and the 20- to 24-year-old age group, as included in the HIV register system of the Ministry of Health of Estonia (MoH 2009). In the 15- to 19-year-old age group and the 20- to 24-year-old age group, 25 and 82 new HIV infections were diagnosed, respectively, in 2009 (Haldre, Part, and Ketting 2012). We excluded injecting drug use (IDU)-related HIV infections. According to AIDS counselling centres in Estonia, 90% of new HIV infections in 2001 were IDU-related but this declined to 48% in 2009 (National Institute for Health Development 2009).

Data on abortions, births, STIs and new HIV infections were available for the whole duration of the SE programme.

Trends in health outcome indicators over time may be explained by a number of events, including the SE programme. We gave careful consideration though to identifying a starting point when the programme could plausibly start to influence students' sexual behaviour, adjusting the time trends to account for (i) increasing sexual activity with age, (ii) demographic changes, and (iii) declining median age at first sexual intercourse in Estonia.

Starting point for the analysis

We assumed that the Estonian SE programme would only influence students' sexual behaviour *after* they had completed the SE curriculum, because at the beginning of the programme students were on average 12 years old and hardly any of them were sexually active at that young age. Later, at the end of the curriculum, approximately half the students were sexually active and therefore the SE programme can be expected to have had an impact on sexual behaviour. The programme was initially taught over five years. In 2002 the curriculum was modified to be taught over three years. This change was assumed not to influence the impact or timing of it. The SE programme started in 1997 and the impact of the programme was assumed to begin five years later, in 2001, when the first students were, on average, 17 years old. Therefore, data for 2001 were used as a baseline for impact analyses for the 15- to 19-year-old age group. Furthermore, we accounted for increasing sexual behaviour with age – we used the year 2004 as the starting point that any impact could occur among the 20- to 24-year-old age group.

Demographic changes

Estonia has undergone notable demographic changes in recent years, and the population in the 15- to 19-year-old age group declined rapidly by 17.4% between 2005 and 2009 (SE 2009). We filtered out the impact of this population decrease on the reduction of pregnancies, STIs and HIV infections, as these should not be attributed to the SE programme.

Increasing proportion of sexually active population

The median age at first sexual intercourse has declined in Estonia. The proportion of sexually active people in the 15- to 19-year-old age group increased from 37% in 1990 to 50% in 2005. The earlier sexual initiation increases the size of the group at risk, and was taken into account when assessing the impact of the SE programme. Time-wise changes in

the proportion of sexually active people in the 20- to 24-year-old age group were not observed because the vast majority of the population at this age is sexually active already.

Other factors

Modern contraceptives became widely available in Estonia during the first half of the 1990s. The availability and the use of modern contraceptives have certainly influenced trends in unintended pregnancies, STIs and HIV infections. However, these changes took place before 1995, *before* the SE programme began. The availability of modern contraceptives was a precondition for the SE programme to have an impact. Therefore, use of contraceptives was not factored into impact estimations of the SE programme. Secondly, the SE programme is closely linked with YCCs – the two interventions were developed and implemented simultaneously. The impact of each of them is conditional on the availability of the other. Therefore the impacts of these two interventions were interlinked and cannot be separated.

Exploratory cost-effectiveness analyses

We calculated the exploratory cost-effectiveness of the SE programme by dividing the total programme costs by the total health effects over the whole period considered. We also included the health care cost savings that are associated with averted treatment cost, especially those of antiretroviral HIV treatment. Finally, we conducted a threshold analysis to estimate which portion of the impact (averted HIV infections) should be attributed to the SE programme, in order for it to be cost saving.

Results

Programme coverage

Figure 1 illustrates the cumulative number of students reached during the period 1997–2009. At the end of 2009, the SE curriculum had been taught to 190,000 students.

Programme costs

How much did it cost to implement the SE programme? The total implementation costs of the 13-year implementation period (1997–2009) were USD 5.6 million. A breakdown of

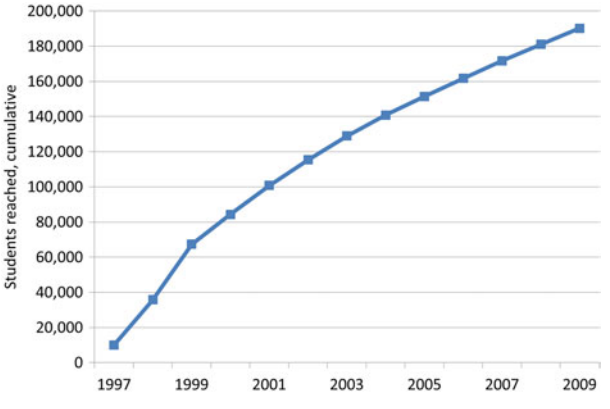

Figure 1. Cumulative number of students reached in Estonia 1997–2009.

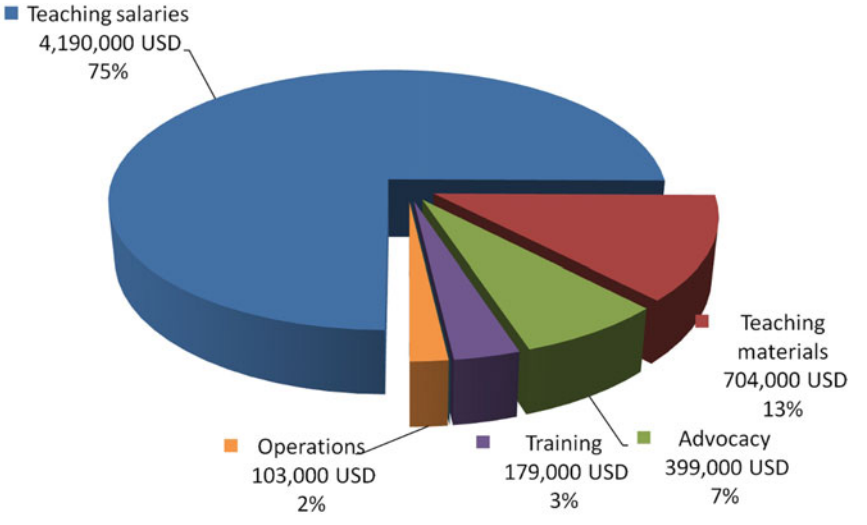

Figure 2. Total implementation costs 1997–2009.

the total implementation costs is shown in Figure 2. Teaching salaries were the largest cost component (75%) and cumulated to USD 4.19 million. Teaching materials accounted for USD 704,000 (13%). Advocacy activities totalled to USD 399,000 (7%). Teacher training cost USD 179,000 (3%) and finally USD 103,000 (2%) was used for operations.

Cost per school, student reached, learning hour and teacher trained

Table 1 shows the cost per school, student reached, learning hour and teacher trained. Annualised costs of 2009 were used for calculating costs per school, student reached and learning hour. These costs amounted to USD 311,000. Cost per school was USD 814. Cost per student reached (completed three-year SE curriculum; grades 5, 6 and 7) was USD 32.90. Costs per SE learning hour were 1.03 USD. In the period 1996–2009, total training costs were USD 137,000 and costs per trained teacher were USD 197.

Impact analysis

The number of registered abortions in Estonia in the 15- to 19- and 20- to 24-year-old age groups is shown in Figure 3(a). In the 15- to 19-year-old age group, the number of abortions has declined by 45%, from 1568 cases in 2001 (starting point of analysis) to 864

Table 1. Cost per school, student reached, learning hour and teacher trained in Estonia in 2009.

Unit	Annualised cost	Number of units	Cost per unit
School	USD 311,000	382[a]	USD 814
Student reached, completed three-year curriculum	USD 311,000	28,000[4]	USD 32.90
Learning hour	USD 311,000	298,000[5]	USD 1.03
Teacher trained	USD 137,000[6]	693[b]	USD 197

Notes: [a]CSHIR survey (2000); [b]ESHANIHD (2009).

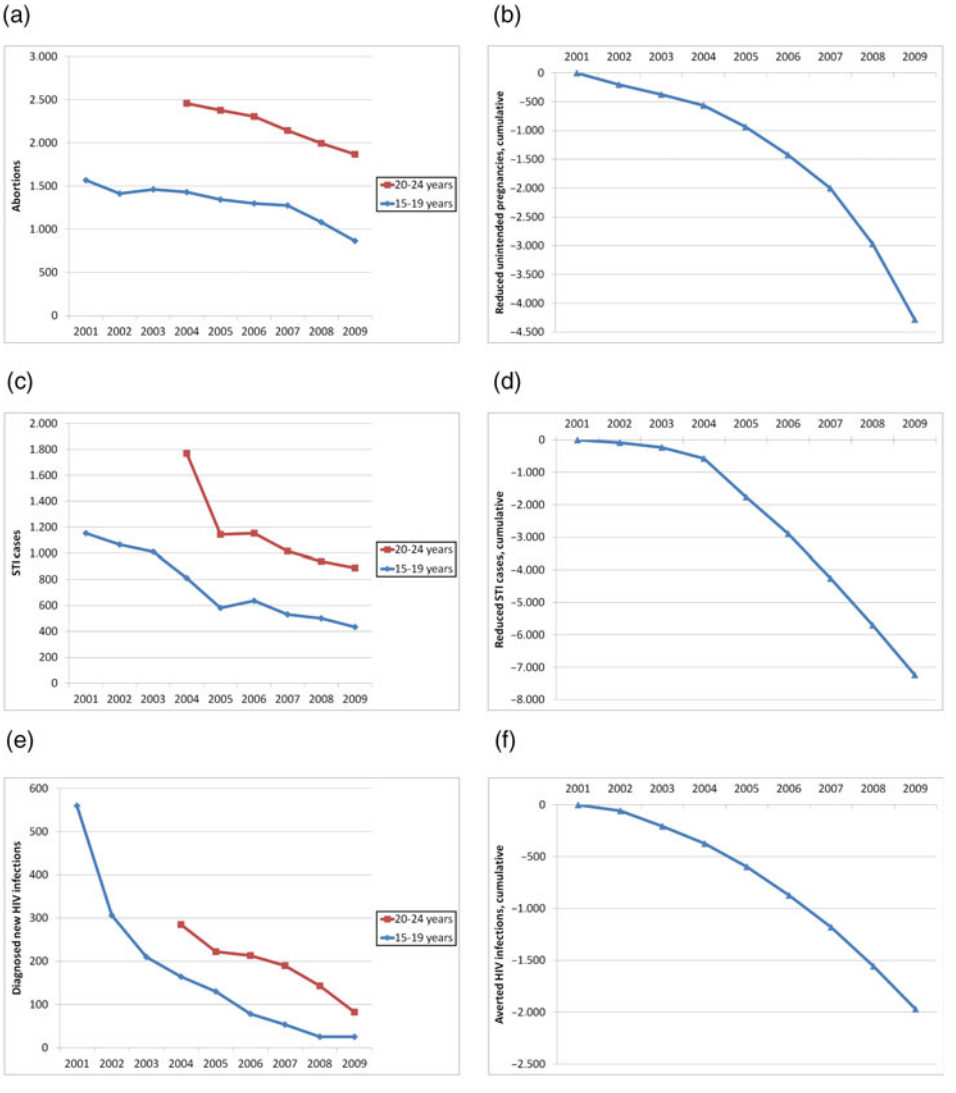

Figure 3. Reduction of abortions, STIs and new diagnosed HIV infections in age groups 15–19 years and 20–24 years in Estonia 2001–2009. (a) Abortions per year in age groups 15–19 years and 20–24 years. (b). Cumulative reduced unintended pregnancies in age groups 15–19 years and 20–24 years. (c) STI cases per year in age groups 15–19 years and 20–24 years. (d) Cumulative reduced STI cases in age groups 15–19 and 20–24 years. (e) Diagnosed new HIV infections per year in age groups 15–19 years and 20–24 years. (f) Cumulative averted HIV infections in age groups 15–19 years and 20–24 years.

in 2009. The starting point of impact in the older 20- to 24-year-old age group was set to 2004 because by then the first students had reached this age. In the 20- to 24-year-old age group, abortions declined by 24%, from 2457 cases in 2004 to 1867 cases in 2009. The combined cumulative reduction of unintended pregnancies in the two age groups is shown in Figure 3(b). In total, there have been 4280 fewer unintended pregnancies in the target group of the SE programme since 2001. These data were adjusted for demographic changes and earlier sexual debut.

Table 2. The maximum feasible impact of the SE programme in Estonia during the period 2001–2009.

Health outcome	Number
Unintended pregnancies	4280
STIs	7240
HIV infections	1970

Diagnosed STIs among 15- to 19-year-olds and 20- to 24-year-olds are shown in Figure 3(c). In the younger age group, infections declined by 62%, from 1153 cases in 2001 to 435 in 2009. In the older age group, STIs dropped from a high of 1769 cases in 2004 to 890 infections in 2009, which represents a 50% decline. The combined cumulative reduction of STIs in the two age groups is shown in Figure 3(d). In total, there have been 7240 fewer diagnosed STI cases among the target population of the SE programme since 2001. These data were adjusted for demographic changes and earlier sexual debut.

The number of diagnosed new sexually transmitted HIV infections has dramatically decreased in the 15- to 19-year-old and the 20- to 24-year-old age groups during the period 2001–2009 (Estonian Health Board 2009a) (Figure 3(e)). In the younger group, the number of new HIV infections dropped by 96%, from 560 new HIV + cases in 2001 to only 25 new diagnoses in 2009. In the older age group, the reduction was 71%, from 285 new HIV + cases in 2004 to 82 new diagnoses in 2009 (The Ministry of Health of Estonia 2009). Figure 3(f) shows the combined cumulative number of averted HIV infections in these same age groups, after our adjustments for demographic changes, increasing sexual behaviour with age, and the proportion of IDU-related HIV infections. We estimated that there have been 1970 fewer diagnosed HIV infections in the two age groups between 2001 and 2009.

It was not possible to measure to what extent the improvements of these sexual health indicators are attributable to the SE education programme itself. The maximum feasible impact of the SE programme on unintended pregnancies and STIs including HIV infections in the 15- to 19-year-old and 20- to 24-year-old age groups is summarised in Table 2. The table should be interpreted in the context of the above discussion of the attribution of impact to the SE programme. As the discussion is based on estimations, it is difficult to be more precise on the quantitative impact of the SE programme.

Exploratory cost-effectiveness analyses

Total programme costs were USD 5.6 million for the period 1991–2009. Table 3 shows the results of the explorative cost-effectiveness analysis for the SE programme considering only averted HIV infections. Cost-effectiveness analysis should not only include SE programme costs but also net savings from averted treatment costs. Average annual costs

Table 3. Costs, savings and impact (HIV prevention only) of the SE programme in Estonia.

Programme costs (USD)[7]	Lifetime treatment costs per HIV infection (USD)[8]	Number of averted HIV infections at break-even point[9]	Observed reduced number of HIV-infections in Estonia 2001–2009	Required impact to make SE programme cost saving
5.6 million	67,825	83	1970	4%
(a)	(b)	(c) = (a)/(b)	(d)	(e) = (c)/(d)

of treatment of HIV/AIDS in Estonia equalled USD 8416 per patient in 2009, and this included costs of antiretroviral drugs (USD 5362), outpatient treatment (USD 427) and inpatient treatment (USD 2627) (The Ministry of Social Affairs of the Republic of Estonia 2009). These costs exclude those of diagnosis. In the most conservative scenario, anticipating an antiretroviral price reduction (Waning et al. 2008) from 2011 onwards to USD 176 per patient year (WHO 2010; MSF 2010[2]), average annual treatment costs would decrease to USD 3230. With the average age of HIV diagnosis approximately 27 years in Estonia (NIHD 2007), and assuming a remaining life-expectancy of 32 years after becoming infected with HIV (Schackman et al. 2006), the total undiscounted lifetime treatment costs would amount to around USD 103,360 in Estonia. If discounted for time-preference with a 3% discount rate, these costs would amount to USD 67,825. Table 3 shows that the SE programme would become cost saving if it would prevent only 83 HIV infections. This represents only 4% of the observed reduction in HIV infections in Estonia in the period 2001–2009 (after controlling for other factors mentioned above). At this impact level, cost savings resulting from the averted treatments costs would be much higher than the cost of implementing the SE programme. In other words, our analysis suggests that the SE programme could be cost saving if only 4% or more of the observed reduction in HIV infections can be attributed to it. Please note that this is a hypothetical analysis on the required impact level, not an impact assessment of the programme.

Discussion

Limitations

The cost analysis has a number of limitations. First, the SE programme is an integrated component of the Estonian primary school curriculum and is solely implemented by the Ministry of Education. Because of this, there are no separate records on costs of the SE programme. Therefore, it was not always possible to make a sufficiently detailed assessment of the costs and in a number of instances we needed to make assumptions. Second, the definition of which topics of the human studies curriculum are specific to SE is somewhat arbitrary and influences our estimates of the share of working time that teachers spend on the SE programme – and therefore total programme costs.

Moreover, the impact and cost-effectiveness analyses faced major challenges. First, it was not possible to show or measure to what extent the remarkable improvements of sexual health indicators among Estonian youth are attributable to the SE programme. Second, our cost-effectiveness analysis is based on reported new HIV infections. It does not capture non-diagnosed HIV cases or potential cost savings resulting from averted STIs or unwanted pregnancies. Third, the HIV trend reflects actual policy in Estonia, and the incidence may have been higher in the absence of any HIV/AIDS control programme. Fourth, the analysis does not capture the broader individual and social benefits of the SE programme (such as reductions in sexual violence, increased self-awareness and self-efficacy in a range of decision-making areas, or improved overall communication and quality of interpersonal relationships). Our approach can therefore be interpreted as conservative.

Cost analysis

The Estonian SE programme offers an excellent example of a fully scaled-up integrated intra-curricular programme at relatively low cost – this may hold important lessons for other countries that wish to implement such a programme.

The total costs of the SE programme over the period of 1991–2009 amounted to USD 5.6 million. The initial development and first update costs were very low because of low salary levels[3] during the first years of independence of Estonia. Nearly all of the total costs were implementation costs, and only a small fraction of these were initial development costs or update costs.

The cost per student reached (completed curriculum) of USD 32.90 is relatively low, in comparison with the other five SE programmes in the UNESCO study (UNESCO 2011). The main reason is that the programme is an integrated intra-curricular component of the Estonian basic school curriculum, which has several advantages. First, it is therefore implemented on a large scale, reaching 28,000 students in 2009. This obviously reduces costs per student of national-level activities, such as programme development, coordination or teacher trainings. Second, because of its integrated and, therefore, mandatory nature, the programme covers almost all students in each school, and as such reduces costs per student of school-level activities, such as teaching salaries.

Cost per student reached is relatively low because the programme has relatively few SE lessons. We attributed some 24 teaching hours over the course of 3 years to the SE programme. Moreover, class size is an influential factor for cost per student reached. Class sizes are relatively small (on average 18 students). Yet, this did not significantly increase the cost per student reached. This is due to the combination of mandatory uptake and few SE lessons.

Exploratory cost-effectiveness

The Estonia SE programme can be considered cost saving if only 4% or more of the observed reductions in HIV infections are attributed to the programme. Our qualitative and quantitative analyses demonstrate that the impact is likely to be much higher, and there is strong evidence to support that the Estonian school-based sexuality programme has been a cost-saving intervention.

It is important to consider that our quantitative estimates are conservative in the sense that they do not include the health care costs of abortions (in a proportion of all unintended pregnancies) and STI treatment, let alone the value of non-health outcomes. Also, it should be emphasised that the impact of the Estonian SE programme can only be achieved in the presence of YCCs, as they are interlinked. However, the cost of the YCCs was excluded from our analyses because the focus of this study was the SBSE program. The results are conditional on the presence of the YCCs and should be interpreted with caution.

On the basis of our analysis in Estonia, evidence suggests that SE programmes are potentially highly effective, cost effective and even cost saving. However, any such findings are highly dependent on programme characteristics and context. Optimal SE programmes may therefore compare favourably to other preventive interventions in HIV/AIDS (such as voluntary counselling and testing, or condom social marketing) that typically incur costs to achieve health effects, as shown repeatedly in international literature.

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Notes

1. Primary schools in Estonia cover the first nine years of (mandatory) education, which starts at the age of 7 years and lasts until students are about 16.
2. The lowest generic price for a fixed-dose combination of tenofovir disoproxil fumarate/lamivudine/efavirenz (TDF/3TC/EFV).
3. Cost of development and update work done by volunteers was included through shadow pricing.
4. Calculations based on (i) Ministry of Education and Research, Actual numbers of students per grade and per year 1997–2009, and (ii) CSHIR survey 2000.
5. Calculations based on (i) number of SE lessons taught (Estonia school survey 2010), and (ii) number of students reached in 2009.
6. Refers to total training costs in the period 1996–2009.
7. Total programme costs 1991–2009.
8. Discounted life-time HIV/AIDS treatment costs.
9. At the break-even point, SE programme costs equal savings from averted HIV treatment costs.

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