Sexual and Reproductive Health educational intervention for school teachers in district of Kalutara, Sri Lanka

R Hettiarachchi[1], S Sivayogan[2], SAP Gnanissara[3]

Abstract

Introduction

To plan and implement a Sexual and Reproductive Health (SRH) educational intervention for school teachers and evaluate the effectiveness of the intervention.

Methods

An educational intervention was designed based on a situational analysis of existing SRH education in Sri Lankan schools. Intervention was carried out as four days teacher training workshop on SRH teaching for school teachers (thirty one) in the intervention group. Teachers in the control group (thirty) exposed to the pre-existing educational seminars conducted by the ministry of education at zonal level. After the intervention teachers in both intervention and control groups taught SRH lessons to grade nine students according to the existing school curriculum. Teaching skills were assessed using standard checklists. A quasi-experimental, equivalent control group design with pretest-posttest components was used to evaluate the effectiveness of the intervention. Sixty one teachers and 914 grade nine students aged 15-16yrs completed anonymous self reported pre-and post intervention questionnaires. Scores for baseline, first and second posttests were compared between intervention and control groups.

Results

Results of the situational analysis showed that the ill prepared teacher is the main barrier for SRH education. Post intervention teaching skills were significantly improved in the intervention group (p-0.002). There was also a significant improvement in SRH knowledge and attitude among grade nine students ($p < 0.05$) in the intervention area after the intervention.

Conclusions

Developing and conducting a new educational intervention for SRH education based on situational analysis proved successful with regard to improved teaching skills as well as knowledge and attitudes among students.

Key words

Sexual and reproductive health, educational intervention, school teachers

Introduction

The global trend of an early onset of puberty combined with increased age at marriage, leading to increase in premarital sex is also observed in Sri Lanka where mean age of menarche is 11.4 and age of marriage is 24.6 years[1]. The period between menarche and marriage is seen as a risk period for reproductive health of adolescents as they initiate and continue sexual activities[2]. These factors may lead to sexual abuse, unwanted pregnancies, unsafe abortions, maternal deaths and contracting STIs including HIV/AIDS[3].

Regardless of its form and emphasis, Sexual and Reproductive Health (SRH) education has been controversial[2-4]. Many have feared that it might encourage sexual activity among young people who are not yet sexually active, and increase levels of risk-taking behaviour among those who are sexually experienced[2-5]. Discussion points include: how much explicit educational material there should be,how often sexual education should be given and at what age to initiate this education[6]. However, it has been shown that well-designed SRH education programmes can positively influence the delay in initiation of sexual activity, reduce the number of sexual partners and reduce unplanned pregnancy and STIs [7-8].

Although many interventions were carried out to improve Adolescent Sexual and Reproductive Health (ASRH), there is lack of effective school based interventions as a package in many developing countries including Sri Lanka. Scientific and valid information on effective interventions

1. Consultant Community Physician, National Institute of Health Sciences, Kalutara.
2. Professor in Community Medicine, Department of Community Medicine, Faculty of Medical sciences, University of Sri Jayawardenepura
3. Former DDG/Education, Training and Research, Ministry of Health.

promoting ASRH would make a positive contribution towards making policy decisions and programme planning for ASRH. By conducting scientific intervention programmes, researchers can identify effectiveness of the programme as well as deficiencies of the implemented interventions. This will help to determine better ways of conducting new programmes by overcoming the deficiencies in an effective and sustainable manner. Therefore, investment is needed in research that provides practical and sustainable solutions, which will be able to reduce SRH problems among adolescents.

Teaching SRH requires different skills and approaches compared to than teaching other less sensitive, more conventional subjects[9]. Teaching the content alone is not sufficient in sexual health education. Students may be able to pass a paper-pencil test on health knowledge, but this does not ensure that the student will put that knowledge into practice. This is known as a "health behaviour gap", which refers to the discrepancy between personal health knowledge and general health behaviour[10].

The Ministry of Education in Sri Lanka introduced Sexual and Reproductive Health (SRH) component into the school curriculum in 1994 and revised it in 1999. During the past ten years, teacher-training programmes for SRH conducted in Sri Lanka have consisted mainly of knowledge-based seminars and were not focused to develop competency in SRH teaching[11]. In addition, even though SRH had been included in the school curriculum, knowledge of and attitude to SRH was low among Sri Lankan adolescents[12-14]. In an attempt to improve this we designed a new educational intervention on SRH education for adolescents and assessed the feasibility and effect of implementing this in Sri Lankan schools.

Methods

Study site and population

Kalutara district is located in the western province of Sri Lanka. It has a population of about 1 million of which 20% are adolescents. For educational purposes Kalutara district is divided into three educational zones, namely Kalutara, Horana and Mathugama[15]. Grade nine students were considered as the most appropriate group for the intervention because in Sri Lanka SRH teaching is already part of the curriculum for this age group. There are 218 schools with grade nine classes in the Kalutara district with 5.488 grade nine students[15]. This study was conducted in two comparable educational zones. Kalutara educational zone was selected as the intervention area and Horana educational zone as the control area.

Study design

A quasi-experimental, equivalent control group design with pretest-posttest components was used to evaluate the effectiveness of a new SRH educational package

The study consisted of five phases (Figure 1).

Situational analysis of existing SRH education (Phase I)

To identify the existing situation for SRH education, informal interviews (five) were carried out with experts in both health and educational sectors in Sri Lanka who had experience in SRH education. Focus group discussions were carried out with school principals (one), master teachers (one), health and physical education teachers (two), grade nine school children (two) and their parents (two) with 10-12 participants in each discussion.

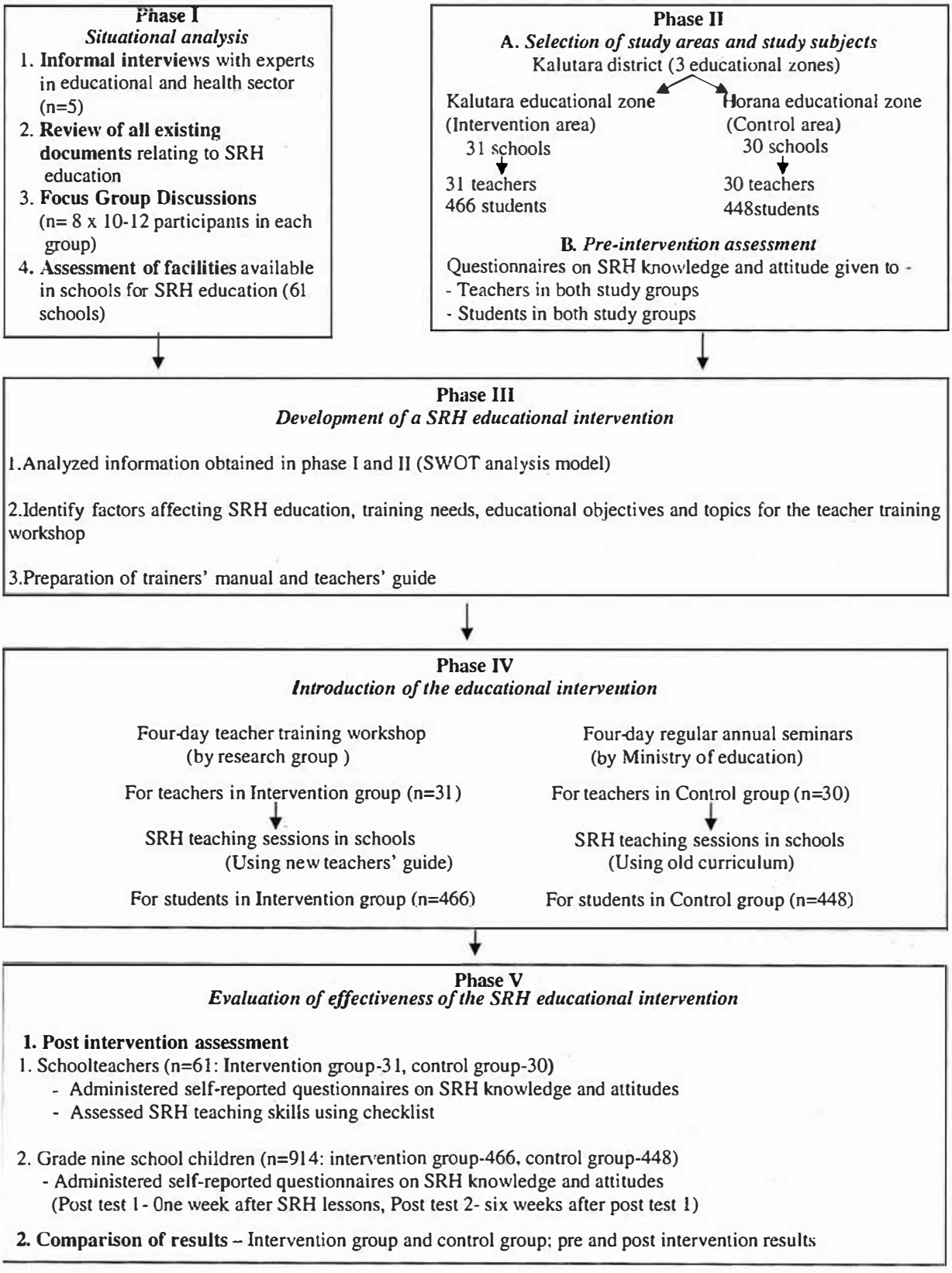
Documents relating to SRH education such as the school curriculum, school text books relating to SRH, teachers' guide books, previous reports on school SRH education and 5-year work plans on school education were reviewed. The availability of basic facilities in schools such as whether there was a separate classroom for grade nine students, adequate numbers of desks and chairs, blackboards and teaching-learning aids for SRH education were also assessed using a checklist.

Selection of study groups and pre- intervention assessment (Phase II)

Among 218 schools with grade nine classes only 61 schools had health and physical education teachers who teach SRH. All these 61 schools were included in the study (31 schools in intervention area and 30 schools in control area). Sixty one health and physical education teachers (one health and physical education teacher from each school) were included as primary target group in the study.

To evaluate effectiveness of the intervention grade nine students who are taught SRH lessons by health and physical education teachers in intervention and control groups were included as secondary target group for the study. In calculating the sample size for grade nine students, it was considered necessary to identify a difference in the stated outcome of at least 15% from a baseline value of 35% with power of 85%. A multi-stage sampling method was adopted. A grade nine class was considered as a cluster. Sixty one grade nine classes (one class from

Figure 1– study design



each school) were randomly selected for the study. To minimize the clustering effect, the obtained value was multiplied by a clustering effect of two[16]. Accordingly, from the 61 schools, 914 students (15 from each class) were selected randomly with almost equal numbers of boys and girls were included into the study (483 girls and 431 boys).

The pre-intervention assessment was carried out in the respective schools one week before the educational intervention was introduced. Two separate self-reported pre-coded and pre-tested questionnaires (one for students, one for teachers) were used to gather information on knowledge and attitudes in relation to SRH. The questionnaire included three sections: (i) demographic characteristics, (ii) a section evaluating SRH related knowledge including anatomy and physiology of the reproductive system; and knowledge about pregnancy, abortion, sub fertility and STIs and (iii) a section evaluating participants' attitude towards SRH education in schools, size of sexual organs, nocturnal emission, masturbation, menstruation, virginity and myths surrounding STIs.

Data collectors were informed about the objectives of the study, random selection of students, and distribution of the questionnaires, problems that can occur during the data collection and how these can be tackled. Guidelines on data collection were prepared and given to the data collectors to facilitate and standardize the data collection.

Development of the new SRH educational intervention package (Phase III)
Information obtained in phase I and II was analyzed by using the SWOT model [Strengths, Weakness, Opportunities and Threats] (Table 1) to understand how various factors affect SRH education and used to design the educational intervention. A trainer's manual on SRH teaching were developed with emphasis on depth of knowledge a teacher should possess, skills needed to teach sensitive topics, developing a positive attitude towards SRH teaching and good teacher-student relationship. The teachers' guide consisted of a general introduction, model lesson plans with educational objectives, teaching methods and examples of health messages for adolescents. An information sheet with relevant diagrams and simple explanation of the content is included. This guide was developed to be user-friendly.

Introduction of the SRH educational intervention (Phase IV)
Intervention was carried out as four-day teacher training workshop for the teachers in the intervention group. There were six- 45 minutes sessions per-day consisting of lecture discussions supported by visual techniques and participatory learning methods, small group activities, case studies, role-playing exercises, demonstrations and micro-teaching sessions. Topics discussed during the training workshop included: importance of teaching SRH in schools, physical and psychological changes that occur during adolescence, prevention of teenage pregnancy, sexual abuse, unsafe abortions and STIs/AIDS, how to dispel myths about e.g. size of sexual organs and discuss topics such as nocturnal emission, masturbation, menstruation and virginity. During the workshop teachers were specially trained to prepare lesson plans for SRH teaching and to talk about sensitive issues openly with adolescents. In the intervention area this workshop replaced the usual annual seminars on SRH as given by the Ministry of Education. Teachers in the control area continued with the annual seminars consisting of non- participatory lectures on anatomy and physiology of the reproductive system (4-days of seminars).

Post intervention assessment (Phase V)
One month after the training workshops and annual seminars, teachers in both intervention and control groups were asked to teach SRH lessons according to the existing curriculum to grade nine school children in their respective schools during the given period of time allocated to this in the curriculum (one and half months- one classroom session per week).

Teaching skills of all teachers in the intervention group and the control group were observed and assessed by master teachers using a validated checklist. Post intervention knowledge of and attitude to SRH among teachers in both study groups was assessed one week after completion of SRH teaching in schools by using the same self-reported questionnaires used in the pre intervention assessment. Impact of the intervention was evaluated from post intervention knowledge of and attitude to SRH among grade nine students in the intervention and control areas (one week and six weeks after completion of SRH teaching) by administering the same self-reported questionnaires used in the pre-intervention assessment.

Statistical analysis

For continuous variables, mean scores on SRH knowledge and teaching skills were calculated and the t-test was used to assess differences between the intervention and control groups. Scores of attitude were not normally distributed. Therefore, nonparametric tests i.e. Man Whitney U-test (for unpaired data) and Wilcoxan signs rank test (for paired data) were applied to assess the difference between pre and post intervention attitudes and difference between intervention and control groups. Data were analyzed using SPSS version 12.0.

Ethical approval

Ethical clearance for this study was obtained from the Ethical Review Committee of the Faculty of Medicine, University of Colombo, Sri Lanka. Written informed consent from the parents or guardian was obtained for all children. Before the study commenced permission was also obtained from the State Ministries of Education and Health, and from the Provincial Directors of Education and Health - Western Province, Deputy Provincial Director of Health Services (DPDHS) Kalutara and school authorities. All data collected at the pre and post intervention assessments was handled maintaining strict confidentiality throughout the study.

Results

Socio - demographic information of teachers in the intervention and control groups were compared. The majority of teachers were in the 30-39 year age group and there was no significant difference in mean age of teachers in the intervention (37.1) and control group (34.3) (p=0.176). Majority of teachers in both groups were female (intervention group - 74.1%, control group – 80.0%). More than ninety five percent of teachers were Sinhalese (intervention group - 96.7% , control group – 100.0%) and majority of them were Buddhists (intervention group – 96.7% , control group – 90.0%). When comparing their educational level only 25.0% of teachers in the intervention group and 20.0% in the control group had done the GCE (A/L) examination in science subjects. This in educational qualification was not statistically significant (p = 0.651).

The majority of teachers who were given the responsibility for teaching SRH were appointed as health and physical education teachers (90%). Mean duration of service was 14 years and duration of teaching health and physical education subject is 10 years in both study groups. Mean number of years experience of teaching SRH was 4.7 (SD 2.6) and 6.2 (SD 3.2) years in the intervention and control group respectively. It is important to note that 80.0% of teachers in both groups had never received any in-service training in relation to SRH.

Table 1-Strengths, Weaknesses, Opportunities and Threats (SWOT) for SRH education – A situation analysis of SRH Education in Sri Lanka

Strengths
1. Principals, master teachers, teachers, children, parents and experts in health sector and education sector were all of the opinion that school is the most appropriate place for Sexual and Reproductive Health (SRH) education
2. Students are interested and curious to learn about SRH issues.
3. Students like to learn SRH issues from teachers who develop good teacher- student relationship and have good knowledge.
4. An SRH education component was already included in the school teaching curriculum
5. Teachers were aware that they did not have adequate skills to teach SRH.
6. Higher officials in the health sector and education sector had already identified the importance of training teachers to develop specific competency in SRH teaching.
7. "Health and Physical Education" teachers had satisfactory knowledge on SRH in the pre-intervention assessment
Weaknesses
1. Lack of teaching-learning materials to teach SRH e.g. there was no teachers' guide.
2. SRH information presented in the existing school text books was not explained properly and difficult to understand for a non-medical person.
3. Existing teacher training programmes on SRH were not focused on teaching methodology and skills.
4. Existing teacher training were not designed based on an assessment of what teachers feel they needed.
5. "Health and Physical Education" teachers' attitude towards SRH education was not positive.
6. Grade nine school children's knowledge of and attitude to SRH was poor.

Opportunities
1. Several funding bodies in Sri Lanka were keen to promote adolescent reproductive health education and funds were available for SRH education (UNFPA, UNICEF, Plan Sri Lanka)
2. Most of the parents preferred it if the school took responsibility for SRH education.
3. Annual seminars on SRH for health and physical education teachers were conducted by the Ministry of Education regularly.
Threats
1. In Sri Lankan culture SRH issues are not discussed openly.
2. There is an inadequate number of teachers to teach the "Health and Physical Education" subject. Only 61 out of 218 schools in this survey had a teacher for this.
3. The time allocated in the school curriculum to teach SRH was not enough.
4. The SRH lessons in the grade nine curriculum and text book are last but one; therefore these are sometimes not given due to time constraints in delivering the whole curriculum.
5. According to teachers and parents the media give misleading messages about SRH.
6. Majority of parents do not like to discuss SRH issues with their children.
7. Some parents did not understand and appreciate the importance of SRH education.

There was no statistically significant difference in Socio-demographic data (age, sex, ethnicity, religion, parent's education level, parent's occupation) between students in the intervention and control groups.

Information obtained in phase I and II was analyzed and is presented in Table 1.

Assessment of Teachers

All 61 teachers were assessed during the post intervention survey (Intervention group -31 and control group- 30). The difference in teaching skills between two groups was tested using a t-test for independent groups. Statistically significant higher mean scores were obtained in the intervention group compared to the control group for most of the components of the checklist (Table 2).

The difference in pre- and post-intervention knowledge among teachers in the intervention group was compared to that of those in the control group. Significance of difference was tested by using a paired t- test. There was a statistically significant improvement in knowledge for the section about pregnancy related issues (conception, pregnancy, abortion and sub fertility) (p=0.001) and Sexually Transmitted Infections (p=0.001) in the intervention group, with no statistically significant improvement in the control group (p>0.05). However, when comparing the difference in mean scores for overall (all sections) knowledge of SRH,

Table 2 - Comparison of mean scores of teaching skills in Sexual and Reproductive Health sessions

Supervisory Variables	Intervention group (n=31)	Control group (n=30)	p value
	%Mean score (SD)	%Mean score (SD)	
Clarity and relevance of lesson objectives	97.5 (7.5)	71.6 (39.2)	0.001
Initiation of the session	96.7 (17.9)	80.0 (38.5)	0.036
Lesson planning	91.3 (27.1)	82.2 (35.8)	0.266
Coverage of subject content	91.9 (13.5)	75.0 (38.8)	0.030
Session presentation	88.0 (26.3)	63.3 (39.2)	0.006
Teaching/learning materials used	59.6 (47.2)	61.6 (48.5)	0.872
Teaching methods	93.5 (24.9)	73.3 (44.9)	0.036
Method of evaluation of the session	88.7 (24.8)	21.6 (40.8)	0.000
Time allocation	51.5 (50.7)	36.7 (49.0)	0.247
Teacher- student relationship	91.9 (17.1)	75.5 (36.5)	0.031
Management of the class as a whole	96.7 (17.9)	78.5 (38.3)	0.023
Concluding the session	98.3 (8.9)	65.0 (43.8)	0.001
Total % mean score (SD)	**83.0 (20.3)**	**58.8 (33.1)**	**0.002**

* Significance of difference between two groups was tested by using "t test for independent groups"

teachers in both groups did not show an improvement in knowledge (p=0.79, p=0.89) (Table 3).

Significance of difference in pre- and post-intervention attitude to SRH among teachers was tested using the Wilcoxan signs rank test. There was a statistically significant increase in mean scores for attitude for all the selected sub topics of SRH (all sections) among teachers in both intervention and control groups (p=0.01, p=0.001) (Table 3).

Assessment of students

For students, significance of difference in pre- and post-intervention knowledge was tested using t- test for independent samples. For the first post intervention tests (after 1 week), a statistically significant improvement in mean score for knowledge on anatomy and physiology of reproductive systems (p=0.0001); pregnancy related issues (p=0.01); and Sexually Transmitted Infections (p=0.01) was noted in the intervention group. In the control group there was no statistically significant improvement (p>0.05). With regards to attitudes there was statistically significant improvement in attitudes to SRH in the intervention group on most of the selected sub topics reflected in the difference in mean overall score (p 0.029) (Table 3).

In the control group a statistically significant difference was noted in a negative direction (less good attitude score) for some of the topics such as masturbation (mean score: pretest: -2.1 posttest: -5.2) and size of sexual organs (mean score: pretest: -4.7 posttest: -6.5). A statistically significant improvement in mean scores for knowledge on anatomy and physiology of reproductive system; pregnancy and related issues; and Sexually Transmitted Infections was exhibited in both intervention and control groups (p<0.01) in post test 2 (6 weeks later). However, there was no statistical significant improvement in SRH attitude in post test 2.

Discussion

The results of the FGDs and informal interviews revealed the importance of SRH education in schools and school is identified as the most appropriate place to educate children on Sexual and Reproductive Health. However, officials in education sector did not have a clear idea on age appropriate SRH education and current needs of adolescents. Moreover, school children and their parents expect good SRH education to be

Table 3 - Summary of the pre and post intervention assessment scores of knowledge of and attitudes to Sexual and Reproductive Health (SRH) of teachers and students in intervention and control groups

Character	Teachers		Students	
Knowledge on SRH				
	Mean score (SD)	**p value**	**Mean score (SD)**	**p value**
Pre-post - Intervention group	17.8 (9.1) – 20.0 (9.5)	0.7946	14.6(12.2) – 26.5(13.6)	0.0001
Pre-post - Control group	18.5 (12.3) –19. 4 (12.0)	0.8901	15.6(13.2) – 21.8(12.9)	0.0997
Post-post – Intervention and Control groups	20.0 (9.5) – 19.4 (12.0)	0.0915	26.5(13.6) - 21.8(12.9)	0.0000
Attitudes towards SRH				
Pre-post – Intervention group	9.7 – 30.1	0.001	4.7 - 8.4	0.029
Pre-post – Control group	14.3 -31.0	0.013	2.0 – 3.1	0.450
Post–post - intervention and Control groups	30.1– 31.0	>0.05	8.4 – 3.1	0.017

*Pre-post : Difference between pre and post intervention assessment scores
*Post-post : Difference of post intervention assessment scores between intervention and control groups
*Post : Post intervention assessment scores

established in schools. Furthermore, factors affecting SRH education and training needs of teachers were identified during the situational analysis of existing SRH education in schools. This revealed that although the importance of giving SRH education in schools was agreed by experts in both the health and educational sectors, as well as by most parents, the existing training in teaching SRH to adolescents for teachers was not based on a needs assessment and was not directed to improving teaching skills to enable teachers to address sensitive issues with confidence. Lack of competency in teaching sensitive issues is a common problem faced by teachers during SRH teaching sessions[17]. Another main barrier for successful SRH teaching that was identified in this study was the inadequacy and lack of appropriate teaching/learning materials. Therefore, it was agreed that there was an urgent need to prepare user friendly teachers' guide on SRH teaching at least to cover the already existing curriculum. In this study, teachers in the intervention group obtained statistically significant higher mean scores for SRH teaching skills than in the control group showing improved competency after participating in the new training workshops. Except with regard to some specific areas of knowledge (about pregnancy related issues) teachers did not show a statistically significant improvement in SRH knowledge and attitude was not measurably changed after the educational intervention. However, there was a statistically significant improvement in knowledge of and attitude to SRH among students in the intervention group after introducing the new SRH educational package (with no statistically significant improvement in the control group). It is recommended that SRH teaching skills are assessed in an actual classroom setting rather than in micro-teaching sessions[18]. Master teachers in health and physical education assessed the teaching skills of the teachers in both study groups during their normal supervisory visits. All the teachers who were selected for the study were informed that this would happen. This may have led to bias as they may have performed better than during normal (unsupervised) classroom sessions (Hawthorn effect). However, teachers in the intervention group clearly exhibited a better performance in SRH teaching than in the control group ($p=0.002$).

We have shown that the new educational intervention can improve adolescents' knowledge of the anatomy and physiology of male and female reproductive systems; pregnancy and related issues; and Sexually Transmitted Infections. A non randomized controlled trial used to evaluate an AIDS Education Progamme among grade ten students in two public schools in Oklahoma city also showed significant improvement in knowledge among students[19].

Attitudes towards SRH among adolescents in the intervention group became more positive (mean scores: pre 4.7 post 8.4). An intervention on AIDS education for primary school children in Tanzania also revealed that pupils in the intervention group scored significantly higher marks for the knowledge, attitude and communication skills ($P<0.001$) related to AIDS[20]. Another study done in Nigerian secondary school students revealed that students can benefit from specific education programmes that transmit important information necessary to prevent risky behaviour, and improve knowledge and attitude towards HIV/AIDS[21]. Similar studies conducted to evaluate the effectiveness of reproductive health related interventions have shown positive influence on knowledge, attitudes and behaviour in relation to reproductive health[22-24].

The present study further observed that attitude toward masturbation and size of sexual organs changed in a negative direction (less positive) among adolescents in the control group. This highlights the fact that SRH education because of its sensitive nature, if not handled carefully and if accurate knowledge is not transmitted, may result in deterioration of existing status. It clearly showed that sensitive issues in SRH should be taught by well qualified trained teachers. We recommended collaboration between the education and health sectors to determine content of the SRH curriculum and incorporation of a learner-centered educational package such as the one used in this study, which is low in cost and has the advantage of a participatory approach. Training of teachers alone is not adequate to improve health education in schools[25]. Supervision of the performance of SRH teaching by master teachers, providing relevant teaching/learning materials, allocation of adequate time for SRH teaching, sensitizing principals of the schools on the importance of SRH teaching should all be considered when introducing a comprehensive new SRH education package. This study was carried out in one district of the country and the results may not be exactly the same in other settings. In addition due to limited resources and time constraints the present study was not able to enhance the validity of the quantitative data by complementing these with qualitative data (e.g. FGDs) to evaluate the effectiveness of the educational intervention on

behaviour and attitude in more depth and/or in the longer term. However, we feel this educational package was welcomed by both teachers and adolescents, was easy to use and could be scaled up for use in similar settings.

Acknowledgements

This research was supported by the National Science Foundation, Sri Lanka. We would especially like to thank all the data collectors, participants and school principals in the study areas for their support and cooperation. Thanks to the Director and Deputy Directors of the National Institute of Health Sciences- Kalutara, and Divisional Directors of Education in Kalutara district for their support in project implementation.

References

1. Ministry of Health, Nutrition and Welfare. Proceedings of the 5th Asian and Pacific Population Conference. Sri Lanka Country Report. Bangkok, Thailand. 2002.
2. World Health Organization. Programming for adolescent health and development. WHO Technical report series. No. 886. Geneva; 1999.
3. World Health Organization. Adolescent health development programmes The Adolescent. The Second Decade, Improving Adolescent Health and development. Geneva; 1998.
4. Ying L, Randall R, Cottrel L, Donald IW. Needs and Preferences Regarding Sex Education among Chinese College Students: A preliminary study. International Family Planning Perspectives. 2004;30(3): 128-33.
5. World Health Organization. Sexual Behaviour of Young People. Progress in Human Reproductive Research. No. 41. Geneva; 1997.
6. Miller J. Sexual Health Education in Asia and Africa. Partnership for sexual Health Education. Chicago: Meta Press; 1992.
7. Stiernborg M. Zaldivar SB, Santiago EG. Effect of Didactic teaching and experimental learning on nursing student's AIDS-related knowledge and attitudes. Journal of AIDS-Care. 1996; 8(5): 601-8.
8. Susan A, Katherine B, Laurel ML. Monitoring and Evaluating Adolescent Reproductive Health Programs. Focus on young Adults. Tool series 5. Washington: Agency for International Development; 2000.
9. SIECUS. Sexuality Education Curricula. SIECUS Annotated Bibliographies 1998;26(6): 13-36.
10. Reddy RS. The role of the teacher in health instruction. Teaching Health and Nutrition. New Delhi: Ajay Verma for Commonwealth Publishers; 1997.
11. UNFPA. Reproductive Health Education in Schools. Reproductive Health Program in Sri Lanka. UNFPA; 1998.
12. UNICEF. A National Survey on Emerging Issues among Adolescents in Sri Lanka. UNICEF; 2004.
13. Basnayake S. Reproductive and Sexual Health Education. A Sri Lankan experience. Planned Parent Challenges. 2001; 2:43-5.
14. National Institute of Education. A study on knowledge attitudes and practices of secondary school children in Sri Lanka. A collaborative study of the UNFPA and the National Institute of Education. Sri Lanka: Population and Family Life Education Project. 1993.
15. UNFPA. Terminal Survey Report on Knowledge, Attitudes and Practices of Secondary Schools students in Sri Lanka on Reproductive Health Education and Reproductive Health Issues. Population and Family Life Education Project. 2001.
16. Hulley SB, Cummings SR. In Designing clinical research: An epidemiological approach. London: Williams and Wilkins;1991.
17. Awasthi S, Nichter M, Pande VK. School based interventions, developing an interactive STD-prevention programme for youth. Studies in Family Planning. 2000; 31:138
18. Abbatt FR. Teaching for better learning. 2nd ed. Geneva, World Health Organization. 1992.
19. Huszti HC, Clopton JR, Mason PJ. AIDS Educational Programmes: Effects on adolescents' knowledge and attitudes. Pediatrics. 1999; 84 (6): 986-94.
20. Klepp KI, Ndeki SS, Seda AM. AIDS education for primary school children in Tanzania: an evaluation study. AIDS. 1994; 8(8):1157-62.
21. Fawole IO, Asuzu MC, Oduntan SO. A school-based AIDS education programme for secondary school students in Nigeria: a review of effectiveness. Journal of Health Education Research. 1999; 14(5):675-83.
22. Merson MH, Dayton JM, O'Reilly K. Effectiveness of HIV prevention interventions in developing countries. AIDS. 2000;14: 68-84
23. Agha S, Rossem RV. Impact of a school-based peer sexual health intervention on normative beliefs, risk perceptions, and sexual behaviour of Zambian Adolescents. Journal of Adolescent Health. 2004; 34:441-52.

24. Chao-Hua L, Wang BO, Shen Y, Er-Sheng G. Effects of a community based sex education and reproductive health program on contraceptive use of unmarried youths in Shanghai. Journal of Adolescent Health. 2004; 34:433-40.
25. Gilbert JJ. Educational handbook for health personnel. 6th ed. Geneva: World Health Organization; 1987.