

Strategies to improve the uptake of effective contraception in perinatally HIV-infected adolescents

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Abstract

Objective: To assess strategies to improve safe-sex practices in sexually active female adolescents living with HIV, through linking reproductive health (RH) care with HIV care.

Methods: A single arm, 48-week prospective study was conducted with 77 sexually active adolescents in five sites in Thailand. Guided RH education was carried out through video, brochures and individual counselling. Participants were offered free effective contraception (EC), in addition to a barrier method (dual contraception) versus barrier method only. Changes in EC use were assessed with McNemar's test; predicting factors with logistic regression.

Results: Median age was 19 years; 95% were perinatally infected; 30% had been pregnant. All but one showed RH-knowledge improvement after RH education. Individual counselling was most often rated the 'most helpful' educational method. At the screening visit 21% were using dual contraception; 53% a male condom only; 8% EC method only; and 18% were not using any contraceptive method. Dual-contraception use improved with time, reaching 74% at week 48. EC-use at the baseline visit was associated with having ever used EC prior to study entry ($P < 0.0001$), and the study site ($P < 0.0001$). Having ever used EC was associated with a history of pregnancy ($P = 0.0085$) and forced sex ($P = 0.0386$).

Conclusion: Offering continuous RH care, linked with HIV care, resulted in increased use of dual contraception. Healthcare providers played a significant role in the process. RH education should address the main predictors for EC use by adolescents, including past, personal experience.

Keywords: perinatally HIV-infected adolescents, contraception, safe-sex education, linking of care

Introduction

She was born with HIV, her mother died shortly after; her father left... Studied for 9 years, and then stopped, does not work. At 14 she had her first sexual partner; at 17, she gave birth to her first child. Her contraceptive choice was sporadic – condoms occasionally; pills now and then; injection was too painful... At 19, she gave birth to her second child... She takes care of her children; yet, she takes her antiretrovirals (ARV) only from time to time. (Story of a 19-year-old study participant)

In Thailand only 5% of HIV-infected youth up to the age of 18 are reported to be sexually active [1]. Even if most adolescents born with HIV are not sexually active at such a young age, some are, and more are becoming so with each year. Because of antiretrovirals (ARV), approximately one-third of perinatally HIV-infected children worldwide have reached adolescence and half of them are female [2]. Many of those who are sexually active engage in risky behaviour and experience an unintended pregnancy [1]. Being perinatally HIV-infected, being orphaned, engaging in sexual activities at the onset of adolescence and experiencing adherence problems while growing up are factors contributing to the vulnerability of this age group.

Up to 80% of pregnancies in HIV-positive adolescents are reported as unintended [3]. Pregnancy with HIV infection is viewed in general as being safe today [4]. However, adolescent pregnancy tends to be more risky [5]. Additionally, perinatally HIV-infected adolescents seem to be exposed to higher risk of disease progression and death postpartum in comparison to behaviourally infected adolescents as a result of a complex inter-relation of reproductive health, adherence and mental health issues [6,7]. Effective contraception (EC) can reduce the number of unintended pregnancies, and thus vertical transmission of HIV from mother to child, as well as sustain the physical and mental health status of these young women.

Moreover, approximately one-third of all new infections in sub-Saharan Africa, the region with the highest HIV prevalence and incidence in the world, are in young women 15–24 years of age [8,9]. Biological and behavioural changes during pregnancy might increase the risk of HIV acquisition in HIV-negative women; and might increase the risk of HIV transmission if the woman is HIV-positive already [10]. Thus EC, by effectively reducing the numbers of unintended pregnancies, might also reduce the horizontal transmission of HIV. Comprehensively (including, and not limited to, knowledge and access to dual contraception, mental health, integration of services, well-trained and experienced healthcare provision etc.) addressing the safe-sex practices of this target group is essential for managing the HIV epidemic [5,11].

Delaying the start of sexual life and using dual contraception thereafter, and condom-use together with reversible EC, seems to be the most effective option for female adolescents to protect themselves from unintended pregnancy and sexually transmitted infections [12]. A challenging question is how to best deliver this

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service to those who can benefit from it? Linking reproductive health (RH) services with HIV care is considered to be effective [13], which is still rarely the case in practice [13,14]. It is important to train existing healthcare providers and build on already existing facilities.

The objective of this study was to assess strategies to improve safe-sex practices in perinatally HIV-infected adolescents in Thailand, through linking RH care with HIV care. First, we evaluated the benefit of applying guided reproductive health educational activities on safe-sex knowledge. Secondly, we evaluated the uptake and use of reversible EC and factors associated with it.

Methods

We conducted a single-arm, prospective multicentre clinical study. Participants were enrolled from five sites throughout Thailand – HIV Netherlands Australia Thailand Research Collaboration (HIV-NAT), Bangkok; Faculty of Medicine, Khon Kaen University; Phrachomklao Hospital, Phetchaburi; Phrapokklao Hospital, Chanthaburi, and Chiang Rai Prachanukroh Hospital, Chiang Rai. Inclusion criteria were being sexually active females, 12–24 years of age, self-aware of HIV status and post-menarche. Exclusion criteria were being pregnant at the time of enrolment, and having mental or other physical conditions that could limit informed participation in the study. There was a screening visit, baseline visit and follow-up visits every 12 weeks until week 48. All study activities were free of charge. Participation was voluntary, and the eligible participants and their carers (if below 18 years of age) signed an informed consent (assent for those under 18 years of age). The study was approved by the Institutional Review Board at each site.

At the baseline visit all participants received standardised safe-sex education through a study-specific animated video, contraceptive information brochures and individual counselling. Adolescents were provided with information on abstinence, safe sex, reproductive health and contraceptive options. All activities were age appropriate. Interventions were structured and were carried out similarly at each study site. Every attempt was made to maintain the same counsellor and physician for each individual to promote trust and continuity. Healthcare providers at each site received training before initiation of the study, close follow-up and support during the whole study period.

Participants' safe-sex knowledge was assessed with a pre- and post-educational activities study-specific test (Table 1). The educational methods were evaluated by the study participants. Following the educational activities, at baseline and follow-up visits participants could choose between EC methods in addition to a barrier method (male or female condom) versus barrier method only. The choice of EC included: contraceptive pills or depot-medroxyprogesterone acetate (DMPA) injection (short-acting contraception) and hormonal implant or copper intrauterine device (IUD) (long-acting reversible contraception; LARC). Based on medical eligibility, the adolescents had full freedom to decide whether to start using a contraceptive method, continue, change to another method or stop using it at follow-up visits. The financial capacity of the participants was very limited. However, the choice of contraceptives at the baseline visit was usually pills and injectable contraceptives (DMPA). The price of these contraceptives in Thailand could be as low as US\$1–3 per month or every 3 months. The choice for more expensive contraceptives (implants) was presented during follow-up visits (most participants were not aware of the actual price of the more expensive contraceptives

Table 1. Test questionnaire results, before and after health education (HE)

Question No.	Question	Correct answers before HE n (%)	Correct answers after HE n (%)	Change (%)
1	List of known contraceptive methods (total 7)*			
	1–3 methods	33 (43)	9 (12)	31
	4–6 methods	32 (41)	18 (23)	18
	7 methods	12 (16)	50 (50)	34
Question 2–11, please choose whether statement is true or false				
2	Male condom is put on penis, when erect	69 (90)	74 (96)	6
3	Male condom protects from STIs and pregnancy	77 (100)	76 (99)	1
4	Female condom is placed in the vagina	59 (77)	73 (95)	18
5	Condom should be used with every sexual intercourse	74 (96)	76 (99)	3
6	COC tablets should be taken every day at the same time	51 (66)	73 (95)	29
7	Injectable contraceptives can affect the menstrual cycle	32 (42)	60 (78)	36
8	Injectable contraceptives should be applied every week	34 (44)	65 (84)	40
9	IUD is placed in the womb	35 (46)	72 (96)	50
10	IUD can stay and protect from pregnancy 5–10 years, depending on the brand	24 (31)	59 (77)	46
11	Injectable contraceptives, pills, IUD protect from STIs	31 (40)	44 (57)	17
12	What is the most effective way to protect myself from both STIs and unintended pregnancy? (please choose one answer)	37 (48)	60 (78)	30
	(a) Use of male condom only			
	(b) Use of female condom only			
	(c) Use of pills or injectable contraceptives or IUD only			
	(d) Simultaneous use of condom and either pills or injectable contraceptives or IUD			

*Seven contraceptive methods: (1) male condom; (2) female condom; (3) COC, combined oral contraceptive, tablets; (4) injectable contraceptives; (5) hormonal implant; (6) emergency contraception; (7) IUD, intrauterine device.

such as the hormonal implant). Participants on efavirenz (EFV)-based therapy were counselled on possible contraceptive failure with the offered hormonal contraceptives, DMPA excluded, due to possible pharmacokinetic interaction between EFV and the steroid hormones [14–16]. Additionally, social, medical and reproductive histories of the participants were gathered.

We targeted a convenience sample of 100 participants. Data were analysed by calculating the median and inter-quartile range (IQR) for quantitative characteristics, and number and percentage for categorical characteristics, using STAT Aversion 11.2 (Statacorp LP, College Station, Texas, USA). We applied McNemar's test of paired proportions to assess the significance of changes in EC use from baseline to week 48, and logistic regression to assess predicting factors.

Results

Baseline characteristics

Between June 2013 and August 2015 we enrolled 77 sexually active female adolescents living with HIV at the five study sites and followed them for 48 weeks. A weakness of the study was that it was not able to reach the targeted sample size of 100 participants due to small numbers of sexually active female adolescents at each site, although nearly all sexually active participants were enrolled at each site. Participants had a median (IQR) age of 19 (18–21) years. Most participants (95%) were perinatally HIV-infected; approximately one-third were living with one or both parents, one-third with relatives and one-third on their own or with a partner; 57% were currently studying. Ninety-one percent were on antiretroviral therapy with 72% having HIV-RNA <1000 copies/mL; the median (IQR) CD4 cell count was 526 (351–742) cells/mm³. Median body mass index was 19.7 (17.9–21.7) kg/m²; 44% reported alcohol use with various frequencies; smoking and drug use was not common.

Median age at menarche was 13 years and at first intercourse was 16 years; 69% had a history of more than one sexual partner; 68% reported condom use at first intercourse. Two-thirds had disclosed their HIV status to their current partner; only 22 of the 77 (29%) participants were already using EC at the screening visit and only two used a LARC method; 30% had been pregnant prior to enrolment. Approximately 8% of the participants had experienced physical or sexual abuse.

Educational activities

All but one participant showed improvement in at least one of the 12 questions in the post-test in comparison to the pre-test (Table 1). Eighty-six percent appreciated all educational methods (video, brochures and individual counselling). However, rating each educational method from 'least' to 'most' helpful, individual counselling was most often rated 'most helpful' (62%), followed by the educational video (46%) and brochures (22%).

Contraceptive uptake and use

Seven of the 77 adolescents who enrolled in the study did not complete the study – five were lost to follow-up, one became pregnant and one died. The death was related to opportunistic infections. At the screening visit 21% were using dual contraception; 53% a male condom only; 8% an EC method only; and 18% were not using any contraceptive method. Of EC use, 9% was LARC. At the baseline visit, after educational activities, 55% were using dual contraception (14% of EC was LARC). The increase of dual contraception use continued at week 24 (29% barrier method only vs 71% dual contraception; 20% of EC was LARC) through to week 48 (26% barrier method only vs 74% dual

contraception; 31% of EC was LARC). In all cases the barrier method was the male condom. The increase in dual contraception use was statistically significant at baseline after health education versus screening ($P<0.0001$ for any EC, $P=0.046$ for LARC), as well as at week 24 versus baseline after health education ($P=0.0027$ for any EC, $P=0.0253$ for LARC). At week 48 the use of dual contraception and any EC method continued to increase, although insignificantly in comparison to week 24 ($P=0.7815$). However, the increase in the use of LARC methods was still statistically significant in comparison to week 24 ($P=0.0253$). Over half of the participants changed their contraceptive choice at least once during the study period. No participant requested removal of a hormonal implant. Neither copper IUD nor female condoms were chosen by any of the participants. Fear of the procedure, 68% for implant and 86% for copper IUD, was the main factor for not choosing a LARC method.

During the study, three adolescents became pregnant. One did not complete the study, as previously mentioned (and is one of the seven adolescents who did not complete the study); two completed the study after the end of the pregnancy, still within the 12 months of the study follow-up period. Two of the adolescents were using a short-acting HC method with poor adherence and one was using a male condom method only.

EC use was significantly associated with having ever used EC prior to study entry, at baseline visit (odds ratio, OR=8.1, 95% CI 2.92–22.65, $P<0.0001$), and at week 48 (OR=3.8, 95% CI 1.19–12.37, $P=0.024$). An additional predictor for EC use at baseline visit was the study site ($P<0.0001$). In a multivariate analysis, adolescents who had been pregnant were four times more likely to have ever used contraception (OR=4.1, 95% CI 1.36–12.21, $P=0.0085$); and those who had a history of forced sex, were seven times more likely to have ever used contraception (OR=7.3, 95% CI 0.79–66.23, $P=0.0386$).

Discussion

The study found improvement in the knowledge on safe-sex practices in all but one participant. This translated into a significant and continuous increase in the uptake and use of dual contraception from 21% at screening visit to 74% at week 48, when offered for free and conveniently linked with HIV care.

The importance and benefit of education, and more specifically in this case, safe-sex education, is well established. Starting health education or family planning as early as possible in a woman's life, preferably in the adolescent years, is often recommended. Thus, women can become accustomed to safe-sex practices, which they can continue throughout their sexual life [14], and reduce the number of unintended pregnancies [17]. However, the extent to which the knowledge gained through safe-sex education can improve the practice of safe sex is unclear. A recent Cochrane review reported little evidence of the effectiveness of different behavioural interventions for improving dual method use [18]. There might also be a gap between adolescent information needs and information provided by parents, teachers and health professionals [19]. According to the review, most of the information provided by these 'trusted sources' tends to focus on biological issues and somewhat neglects the emotional aspects of sexuality.

In our study, the study site was statistically significantly associated with contraceptive use at baseline visit. We interpreted this as the significant role that the healthcare provider played in the process of contraceptive uptake and use. Additionally, the individual counselling out-rated the more standardised educational tools such as the video and brochures, which were used in the study, as the most helpful educational method. In a qualitative assessment by

Rubin *et al.* of all factors influencing the contraceptive choice of young women, the healthcare provider was described as ‘being the most influential individual’ in choosing a contraceptive method, especially a LARC method [20]. Mothers seemed to be the most important person from the social network [21]. For vulnerable youth, including adolescents living with HIV and growing up without parents, support groups, collaborative learning, peer involvement and school-based health programmes could be viable alternatives [17,22–24].

Healthcare providers play a significant role in the process. However, general and paediatric healthcare providers might lack updated family planning knowledge and furthermore lack practical experience. Thus, they might be reluctant to put their knowledge into practice and counsel young women appropriately [25–27]. Therefore, continued reproductive health training, with a focus on family planning, should be made available to healthcare providers caring for adolescents and young women [11,26]. In respect of this, no participants during the study period started using IUD, which we mainly explain as owing to misconception about the method among healthcare providers in our setting [28]. In Thailand, women are offered all major modern contraceptive methods at public health facilities either free of charge or for a small fee, depending on the health centre and the health insurance of the woman. Almost 80% of Thai women of reproductive age use modern contraception [29]. However, IUD is not a common choice, with only 1.3% choosing it [29]. Furthermore, in a cohort of HIV-positive Thai women, no one was using IUD [28].

In this study, EC use from baseline through to the week-48 visit was statistically significantly associated with ever having used EC prior to study entry. On the other hand, predicting factors for having ever used EC were a history of pregnancy and forced sex. Other authors also report that personal circumstances or experiences that motivate a desire for effective and/or long-acting contraception are among the key factors influencing adolescents’ contraceptive use [20,30–32]. We consider that this data should be addressed in educational materials. Disseminated information should be adapted to reflect the consequences of unprotected sex from real-life experiences.

Although LARC methods are recommended to be considered ‘first-line contraceptive choices’ for adolescents and young adults [33,34], in this study less than one-third of those who were using EC at week 48 were using a LARC method. Over half of the participants changed their contraceptive choice at least once during the study period. We consider that short-acting contraceptive methods can be an important initiation to contraception, and can improve the uptake of LARC in the future. Furthermore, a LARC method will also require follow up with continuation of use in 3–5 years’ time. Therefore, sexually active adolescents, with or without HIV, living in developing or developed countries, need continuous free access to a variety of contraceptive methods and education about the benefits of LARC as a first choice. Novel approaches, including the use of modern technologies and social media for dissemination of safe-sex messages, as well as outreach activities could be alternative strategies to deliver RH services to adolescents and young women, and need further evaluation [24,35,36].

In summary, linking family planning services with HIV services, proved to be a successful way of increasing safe-sex practices among adolescents living with HIV. The study demonstrated the need for and benefit of comprehensive and continuous RH service for adolescents. Safe-sex education, including addressing the main predictors for EC use by adolescents, should be introduced as a standard of care. Healthcare providers are also in need of continuous contraception-related training, as they play a significant

role in the process. To ensure sustainability of the programmes, financial support is needed by the relevant public authorities.

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Competing interests

The authors have no conflict of interest.

Disclaimer

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