3.1 Publishable summary

Executive summary

In Latin America, adolescent sexual activity starts early, with little effort made to prevent sexually transmitted infections or pregnancy, resulting in high incidence of teenage pregnancies, unsafe abortions and sexually transmitted infections. Latin American governments and health policy implementers demand sound proof of effective strategies to improve adolescent sexual and reproductive health (SRH).

CERCA (Community-Embedded Reproductive health Care for Adolescents in Latin-America) has aimed to improve global knowledge about how health systems could be more responsive to the changing SRH needs of adolescents. Implemented by Latin American and European research institutes, CERCA tested community-embedded interventions to improve adolescent communication on SRH issues; access to accurate SRH information; use of SRH services in primary health settings; and use of modern contraceptives. One randomised and two non-randomised controlled studies demonstrated the interventions' usefulness. The study ran from March 2010 until February 2014 in research settings in three Latin American cities.

The overall methodology was a combination of aspects taken from existing methodologies for intervention research (action-research, community based participatory research and intervention mapping) and from behavioural theories (Theory of Planned Behaviour and Social Cognitive Theory). The CERCA design took account of renewed international interest in community-oriented primary care. A comprehensive approach, including family and community support, mobilisation of parents, community leaders and local institutions has increased impact of the interventions. Use of the participant observation methodology during ethnographic field study contributed to gathering knowledge on how different community actors perceive CERCA interventions and implementation process. The CERCA project stressed national and local ownership involving "health policy and practice oriented" stakeholders and establishing national and community advisory boards.

CERCA generated new quantitative and qualitative evidence on determinants of adolescent SRH; developed a methodological model for developing health promoting strategies, designed a strategy for promoting ASRH in Latin America; demonstrated multi-level intervention strategy impact; and generated expertise in development of adolescent SRH research. Monitoring and qualitative data demonstrated feasibility, acceptability and effectiveness for: use of mobile phone messages for outreach; community interventions by trained young adults; and provision of adolescent friendly services in primary health care centres and schools.

The CERCA research had a policy impact at local level (establishment of local adolescent SRH networks with city government funding, adolescent-friendly services installed in health centres, use of CERCA approach for sexual education in schools), at national level (CERCA

researchers contributed to the development of national strategies for adolescent pregnancy prevention) and at international level (CERCA researchers invited as experts to WHO meetings in Geneva (2013) and Ankara (2014) for development of research protocols related to adolescent sexual health).

New proposals based on the CERCA outcomes for scaled up interventions and further research are developed and submitted to international agencies. Currently final negotiations are on-going with the WHO for the funding of a research proposal based on CERCA data for the development of a game theory model of adolescent sexual and reproductive behaviour.

The context

Adolescents in Latin America are confronted with serious sexual and reproductive health (SRH) problems. Studies show that most of the adolescents younger than 20 years have had sexual intercourse with different partners without taking any precaution for preventing sexually transmitted infections (STI) or pregnancy. Up to 50% of the women in the region give birth for the first time during their adolescence and a significant proportion of these pregnancies are unwanted. Teenage pregnancies are linked to a higher incidence of maternal complications during pregnancy and delivery[1,2] and children of adolescent mothers are at increased risk of neonatal mortality, preterm birth and low birth weight[3,4]. In many cases, the context in which adolescent pregnancy occurs makes it difficult for the adolescent to complete school and leads to adverse socio-economic consequences which prevent adolescents from stepping out of the vicious circle of poverty[5]. Furthermore, it is likely that in Latin Americana many pregnant adolescents are seeking unsafe and risky backstreet abortions, as abortion is mostly prohibited

In Latin America there is an urgent need for effective strategies to promote health sexuality among adolescents. However, adolescent health programmes tend to focus on unidirectional interventions aiming at reducing adolescents' risky behaviours (to prevent unwanted pregnancies and HIV/STI infections), but adoption of healthy reproductive health attitudes and behaviours does not happen in a vacuum. Adolescent reproductive health strategies to improve access to reproductive health information and services are critical, but not sufficient. Hence a comprehensive approach is needed. Adolescents require motivation and ownership to make healthy decisions about their reproductive behaviour. Family and community support

[1] Conde-Agudelo A, Belizan JM, Lammers C. Maternal-perinatal morbidity and mortality associated with adolescent pregnancy in Latin America: Cross-sectional study. American journal of obstetrics and gynecology. 2005;192(2):342-9.
[2] Mayor S. Pregnancy and childbirth are leading causes of death in teenage girls in developing countries. BMJ. 2004;328(7449):1152.
[3] Chen XK, Wen SW, Fleming N, et al. Teenage pregnancy and adverse birth outcomes: a large population based retrospective cohort study. Int J Epidemiol. 2007;36(2):368-73
[4] Restrepo-Mendez MC, Barros AJ, Santos IS, et al. Childbearing during adolescence and offspring mortality: findings from three population-based cohorts in southern Brazil. BMC Public Health. 2011;11:781
[5] Buvinic M. The costs of adolescent childbearing: evidence from Chile, Barbados, Guatemala, and Mexico. Stud Fam Plann. 1998;29(2):201-9

are crucial in this context and mobilisation of parents, community leaders and local institutions are essential strategies in SRH programmes focussing on adolescents.

The objectives

The CERCA project aims to contribute to the global knowledge about how health systems could be more responsive to the changing sexual and reproductive health needs of adolescents.

Specific scientific and technical objectives:

1) To assess the SRH needs of adolescents in the research settings of the three Latin American partner countries.

Youths move within multiple contexts (family, peers, community etc.) and their sexual behaviour is determined by diverse factors from these different contexts that influence attitudes, knowledge, skills and norms. In order to develop effective strategies that aim at improving ASRH, it is crucial to identify drivers of adolescents' sexual behaviour. Previous research showed that age, residence, education level, gender norms, socioeconomic status and access to health services are important predictors of adolescents' sexual health in Latin America[6][7][8][9]. However, the socio-ecological mapping of factors determining ASRH remains incomplete. There is a need for more research. Responding to this need the CERCA project conducted a situation analysis on ASRH in Bolivia, Ecuador and Nicaragua and specifically in the selected study sites of those countries. The assessment included:

a) an analysis of the sexual and reproductive health status of adolescents
b) an analysis of the political, social, cultural, religious and economic environment related to the reproductive health of adolescents
c) the identification and analysis of the determinants contributing to or hampering the delivery of community-embedded reproductive health care for adolescents
d) an assessment of the constraints, challenges and facilitating factors for the delivery of community-embedded reproductive health care for adolescents

The results of this situation mapping and analysis helped to formulate hypotheses with regard to community-embedded reproductive health care for adolescents and to set up the

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[6] Samandari G, Speizer IS. Adolescent sexual behavior and reproductive outcomes in Central America: trends over the past two decades. Int Perspect Sex Reprod Health. 2010;36(1):26-35.
[7] Pilgrim NA, Blum RW. Protective and risk factors associated with adolescent sexual and reproductive health in the English-speaking Caribbean: a literature review. J Adolesc Health. 2012;50(1):5-23.
[8] Meuwissen LE, Gorter AC, Segura Z, et al. Uncovering and responding to needs for sexual and reproductive health care among poor urban female adolescents in Nicaragua. Trop Med Int Health. 2006;11(12):1858-67.
[9] Goicolea I, Wulff M, Sebastian MS, Ohman A. Adolescent pregnancies and girls' sexual and reproductive rights in the amazon basin of Ecuador: an analysis of providers' and policy makers' discourses. BMC Int Health Hum Rights. 2010;10:12. Epub 2010/06/08.

design for the intervention strategy that has been implemented in the different research settings.

2) To develop a comprehensive strategy of community-embedded interventions targeted at enhanced access to adolescent-friendly reproductive care in primary health services, supporting and enabling environment, and strengthened competence to make healthy choices and by extension a framework for community-embedded health system interventions.

Latin American governments and health policy implementers demand sound proof of effective strategies to improve ASRH. Work in the field of HIV prevention has demonstrated that complex health issues which bisect socio-economic, geographic and gender inequities require culturally-informed, site-specific, and multidisciplinary responses[10]. However, we do not yet have substantial evidence on what works best when taking a comprehensive approach to address adolescents' sexual behaviour[11]. Consequently the CERCA project has been implemented with the aim to develop and test an intervention strategy that improves the responsiveness of local health systems to the SRH needs of adolescents. At the same time, the experience of interventions for community-embedded reproductive health care for adolescents was used for the development of a methodological model for developing, implementing and testing health promoting strategies. We aspire that the intervention strategy and the methodological model will be useful at different levels of health systems including for local health authorities planning to improve the quality of primary health care services, for authorities from ministerial departments developing campaigns on whatever health topic, and for program officers of international organizations promoting health.

3) To develop, as part of the intervention strategy, an approach to reach adolescents for awareness raising activities (internet and text messages).

Adolescents - even from deprived communities - have broad access to new media as internet and text messages. The integration of new media into health care services helps to overcome existing barriers between the health centres (distance, fees), the health professionals (cultural issues, taboos) and the adolescents. The use of this medium is for Latin America an innovative approach to primary health care in sexual and reproductive health and other health areas. The content of the website will be gradually extended, adding more information on sexual and reproductive health on a regular basis. The use of "adolescent-friendly" communication media such as the internet and mobile telephones will be introduced as a strategic intervention in the CERCA project. The objective is to reach out to adolescents in a cost-effective and efficient way and through popular instruments used by them on a regular basis.

[10] Piot P, Bartos M, Larson H, Zewdie D, Mane P: Coming to terms with complexity: a call to action for HIV prevention. Lancet 2008, 372(9641):845–859.
[11] Jepson RG, Harris FM, Platt S, Tannahill C: The effectiveness of interventions to change six health behaviours: a review of reviews. BMC Public Health 2010, 10:538.

4) To implement and monitor the interventions for community-embedded RH care for adolescents in the different research settings.

It is crucial to develop and implement a monitoring protocol to provide additional input to the action-research process enabling CERCA partners to identify any changes needed to make intervention activities work. The involvement of the community stakeholders in the monitoring process enhances the ownership and community participation in the project. The monitoring allows a detailed description of the methodological model, the global intervention strategy and the specific interventions in each setting.

5) To analyse the community-embedded health care approach in three Latin American country settings and compare with similar community-oriented primary care experiences in Europe.

Substantial scientific supports a community-centred approach when seeking to improve ASRH, both in terms of encouraging healthy behaviours[12] and improving access to existing SRH services[13]. Health interventions are more effective if they are oriented to and embedded in the community as they increase the credibility and acceptability, engagement and ownership from the perspective of the community.

6) To assess the experience with the community-based participatory action research as a method for impact and policy oriented research.

In contrast to expert-driven health interventions, project CERCA seeks partnerships with local community residents in both the research and implementation phases of the project. Community-based participatory research (CBPR) is a collaborative research approach that is designed to ensure and establish structures for participation by all stakeholders in different aspects of the research process[14]. CBPR allows community members, health users and health providers to take ownership of the research and to critically reflect on iterative cycles of evaluation and monitoring. This approach enables a deeper understanding of the local context, as well as the creation of a more accurate framework for testing and adapting “best practices” to meet community’s needs.

7) To obtain and assess quantitative research evidence for evaluating the impact of the interventions.

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[12] Kesterton AJ, Cabral De Mello M: Generating demand and community support for sexual and reproductive health services for young people: A review of the Literature and Programs. Reprod Health 2010, 7:25.

[13] Sorsdahl K, Flisher AJ, Ward C, Mertens J, Bresick G, Sterling S, Weisner C: The time is now: missed opportunities to address patient needs in community clinics in Cape Town, South Africa. Trop Med Int Health 2010, 15(10):1218–1226.

[14] Cornwall A, Jewkes R: What is participatory research? Soc Sci Med 1995, 41(12):1667–1676.

Given the relatively new interest in adolescent sexual and reproductive health (ASRH) as a separate category within the broader field of maternal health and SRH, substantial evidence on what works best when taking a comprehensive approach is lacking[15]. The assessment of complex intervention strategies poses an additional challenge[16]. Studies which use an evaluation approach to measure impact of interventions in a continuously shifting social and cultural context are needed[17].

8) To develop a strategy to bridge the gap between research and policy by involving policy and decision makers actively in the research process.

The recent increasing international interest in and commitment to evidence-informed policy dialogue and processes originate from the willingness to improve development policy and practice. Much is true in the field of health where research evidence is used by policy makers to prepare health policy briefs or to formulate national health policies. The research dissemination remains nevertheless unidirectional and therefore it is key - apart from translating research findings into policy relevant strategies or interventions once the research is final - to involve policy making stakeholders (including civil society organisations and the media) from the start and to mentor them in how to plan research, how to assess the results and how to apply the research evidence.

Recent publications promote the uptake of evidence-based interventions as a priority for researchers, practitioners and policy makers[18] and encourage institutions and organisations to enhance the capacity to apply research evidence in policy-making. Strengthening the research-policy dialogue and institutionalising evidence-based policy-making in developing countries are proposed in order to go beyond the dissemination of research findings and to enhance the capacity to apply research evidence when formulating policies[19].

In order to increase the responsiveness of research to existing health policy concerns, the CERCA proposal envisages involving policy-makers (politicians, civil servants, health policy advisors, health system managers) in the research process as from the beginning. Policy-makers are often not schooled in research, but their involvement contributes to the impact of research on health policy as it increases authority and reliability, engagement and ownership.

[15] Jepson RG, Harris FM, Platt S, Tannahill C: The effectiveness of interventions to change six health behaviours: a review of reviews. BMC Public Health 2010, 10:538.

[16] Laga M, Rugg D, Peersman G, Ainsworth M: Evaluating HIV prevention effectiveness: the perfect as the enemy of the good. AIDS 2012, 26(7):779–783.

[17] Michielsen K, Beauclair R, Delva W, Roelens K, Van Rossem R, Temmerman M: Effectiveness of a peer-led HIV prevention intervention in secondary schools in Rwanda: results from a non-randomized controlled trial. BMC Public Health 2012, 12:729.

[18] Haines A., Kuruvilla S., Borchert M. (2004), Bridging the implementation gap between knowledge and action for health, in Bulletin of the World Health Organisation, October 2004, Vol. 82, pp. 724-732.

[19] Jones N., Jones H. and Walsh C. (2008), Political science? Strengthening science-policy dialogue in developing countries, ODI Working Paper 294, Overseas Development Institute, London.

9) To disseminate the research findings to the scientific, public and political community in the three Latin American countries (Bolivia, Ecuador and Nicaragua), in Europe and worldwide.

The dissemination of results and sharing the research experience will increase the knowledge on the ASRH worldwide and on the strategies on how to address them.

A description of the main S&T results/foregrounds.

A. Methods

Ethical clearance

The research is in compliance with the Helsinki Declaration on Ethical Principles for Medical Research Involving Human Subjects and is approved by the Bioethics Committees of the involved Latin-American countries and by the Bioethics Committee of Ghent University, Belgium (Belgian Registration number of the study: B670201111575). The research has been registered as a Clinical Trial (NCT01722084).

Situation analysis

During the first year a situation analysis was conducted in the research settings to assess the SRH needs of adolescents. The conceptual framework of health determinants was used for identifying and analysing SRH problems of adolescents and the means and activities to address them.

Data for the situation analysis were collected from different documental sources: statistical data at local level (civil registration, reports of health centres, household surveys etc.), national level (national health information systems, demographic and health surveys etc.) and international level (WHO/PAHO, UNFPA, World Bank, etc.). Apart from these documents additional information was obtained from the qualitative and quantitative research activities conducted in the pre-intervention phase.

Development and implementation of the intervention strategy

We designed the intervention model using the existing methodologies of action-research[20] (AR), community based participatory research[21] (CBPR) and intervention mapping[22] (IM). These methodological tools allow us to conduct, on the one hand, intervention research that

[20] Bartholomew L, Parcel G, Kok G, Gottlieb N: Health promotion programs: an intervention mapping approach. San Francisco: Jossey Bass; 2006.
[21] Cornwall A, Jewkes R: What is participatory research? Soc Sci Med 1995, 41(12):1667-1676
[22] Mercenier DGP: Health systems research: a clearer methodology for more effective action. Stud Health Serv Org Policy 2000, 15:39-62

accounts for the complexity of adolescents' SRH determinants; and on the other, to carry out a comprehensive intervention strategy and evaluation plan. Instead of hewing precisely to one specific methodological framework, the CERCA consortium opted to develop a research and intervention model drawing from all three (AR, CBPR, IM) in order to best meet existing adolescents' SRH needs, to ensure community ownership and participant empowerment, and to be responsive to changing political and socio-cultural contexts. The dialogical process of developing, implementing and discussing interventions in close collaboration with key stakeholders has continued to play a dynamic role in the continuous adaptation and modification of intervention strategies, in combination with the results from monitoring and evaluation activities and input from community-based ethnographic research.

The interventions ran during 20 months in each country. The actions addressed distinct target groups (adolescents, parents, local authorities and health providers) and sought improvement of the sexual health behaviours related to communication about sexuality, sexual and reproductive health information-seeking, access to sexual and reproductive health care and safe sexual relationships.

Quantitative research

In order to determine the effectiveness of the interventions it was crucial to work out an evaluation approach that allowed us to measure impact of interventions in a continuously changing context. To that end we developed a specific controlled impact study in the three cities making use of contextualized measurable behaviour outcomes. A pre-intervention baseline survey among adolescents from both target groups and control groups has been realized at the start of the interventions and a post-intervention survey was conducted at the 20-month mark.

In Managua, we applied a cluster randomized controlled study using town districts as selection unit. In Cuenca and Cochabamba the surveys were carried out at local high schools. In the latter cities a random allocation to an intervention and control group was not possible as the intervention could only be embedded in health centres that were allied with the research group.

The collected data of the pre-intervention surveys were used for a double purpose namely for a further assessment of determinants of adolescents' SRH and for the comparison with post-intervention data in order to evaluate the impact of the interventions.

The impact evaluation was based on the data from the longitudinal cohort of 2643 adolescents who were enrolled in the pre-intervention survey and the post-intervention survey. This cohort consisted of 651, 1330 and 662 adolescents in respectively Bolivia, Ecuador and Nicaragua.

Number of adolescents in the groups at follow-up by country:

	Control	**Intervention**	**Total**
Bolivia	216	435	651
Ecuador	563	767	1330
Nicaragua	392	270	662
Total	1171	1472	2643

Qualitative research.

In the first (pre-intervention) phase of the project, we applied both participatory and researcher-led qualitative methodologies to better understand the specific adolescent sexual and reproductive health needs of communities in all three CERCA sites (Cuenca, Ecuador; Cochabamba, Bolivia; and Managua, Nicaragua). The participatory ethnographic research was modeled on the "PEER" method pioneered by Kirstan Hawkins and Neil Price of the University of Wales. This method involves the training of volunteers from the community in collaborative research design and basic interview techniques over the course of a weekend, following a week-to-two week long period during which they conduct interviews with their 'peers' (family, friends, neighbors), and concluding with an analysis workshop where findings are shared and discussed.

In addition to the use of the "PEER" approach, more traditional qualitative research methods were applied to the pre-intervention situation analysis, including focus group discussions using gender-specific facilitation guides (with separate groups of young women and young men, ages 14-17), in-depth semi-structured interviews with health care professionals and community leaders, and participant observation in target intervention sites.

Once the intervention period was underway, we were able to begin using an additional methodological tool of peer group discussions (PG), which we named "comités comunitarios." Peer group discussions are similar to focus group discussions but consist of repeat sessions with the same group. In contrast to focus group discussions, the repetition of engagement engenders relationships of trust and provides "a dynamic understanding of change over time, validate reports, and help to evaluate complex or sensitive topics." The use of periodic peer group discussions, carried out in all three research sites in within a similar time frame and with identical facilitation guides, not only contributed to the evaluation and understanding of complex issues related to ASRH but also provided consortium partners with direct feedback on the project from its participants.

The accumulated research from the first 14 months of the intervention informed the planning of a final period of fieldwork carried out for three-weeks each in Managua, Cuenca and Cochabamba as CERCA activities came to an end. In this last phase semi-structured interview were conducted among young people, among adults involved in project as parents/grandparents and among health workers involved in the project. In addition, focus group discussions for mixed groups of adults and young people and a rapid participatory ethnographic research process centering on communication and advice-giving were implemented. Interviewees, peer group discussants and participatory researchers were recruited from the areas where we had built relationships via the work of the "community committees."

B. Main results

Situation analysis

1) Identification of intrapersonal and interpersonal factors of sexual onset and contraceptive use among adolescents in Nicaragua

Data of a door-to-door survey conducted among adolescents living in randomly selected poor neighbourhoods of Managua in July 2011 revealed intrapersonal and interpersonal factors of sexual onset and contraceptive use.

Information was obtained from 2.803 adolescents aged 13 – 18. Of all respondents, 35% of boys and 21% of girls reported that they were ***sexually active***. Among those sexually active adolescents, 43% of the boys and 54% of the girls stated that they used ***a modern form of contraception*** shortly before the survey. Accordingly, it is not surprising that the ***prevalence of pregnancy*** is high within the studied population. A current or previous pregnancy has been reported by 9% of girls aged 13 – 18 and by 30% of girls aged 18.
The results show that boys under 18 are more frequently sexually active than their female peers. This sex difference in sexual activity was not seen among the 18-year olds. Furthermore, sexual onset was significantly associated for both boys and girls with increasing age, alcohol consumption, having a partner and for girls with absence of the father.
Condoms, oral contraceptives and hormonal injections are the most frequently used methods among adolescents. Only a negligible number of adolescents choose for long acting reversible contraceptives (LARCs) as intrauterine devices or hormonal implants. This could be explained by the fact that hormonal implants are barely available in the Nicaraguan public health system and that caregivers are reluctant to provide intra-uterine devices to nulliparous adolescents.
A ***gender difference*** has been seen in the reported use of contraception. It might be that boys are often not aware of the use of contraceptives by their partners. This lack of awareness among boys about their partner's contraceptive use can also explain why only 12% of the boys report that their partner use hormonal injections while 31% of the girls report being protected by hormonal injection. Both findings suggest that there is a gender difference in taking responsibility towards protection against pregnancy. Another reason for the sex difference in reported contraceptive use could be that girls hide their use of a method from their partners as the idea persist that young women using contraception are up for casual sex, or do not trust their male partner, or might be cheating on him.
The study identified intrapersonal factors positively correlated to condom use, namely living in houses with manufactured floor, being catholic and having a condom at hand. The association to the housing conditions points out that adolescent from a poor ***socio-economic context*** are less likely to use condoms. Being asked about a possible explanation for the ***religious factor*** Nicaraguan researchers argue that the acceptability for using and accessing contraceptives is larger among catholic adolescents than among adolescents from other faith groups. The catholic community has less restrictive norms concerning sexuality and catholic adolescents attach less importance to religion and religious regulations than their peers belonging to another faith.

Our study also looked at interpersonal factors that are related to the kind of relationship, communication factors and peer interactions. The data show a remarkable difference in the contraceptive behaviour between the sexually active ***adolescents who had a partner at the time of the survey and those who did not***. The contraceptive prevalence rate among one third of adolescents without a regular partner at the time of the survey is significantly lower and is mainly based on condoms. The use of oral or injectable contraceptives is extremely low in this group. As sexual activity is irregular and less predictable, adolescents with casual intercourse might not perceive the need for consistent contraception. Consequently, sexually active adolescents without regular partner seem to be very much at risk for unplanned pregnancies. However, the social consequences of teenage pregnancy outside a partnership might be more far-reaching than those of a pregnancy within the protecting context of a relationship. Particularly girls may suffer from the societal disapproval when they become pregnant without being engaged.

Our data highlight the importance of ***communication factors*** in the contraceptive behaviour of adolescents. Feeling comfortable to talk about sexuality with friends is positively associated with condom use. Boys who find it easy to talk with their partner on sexuality report more frequently the use of hormonal contraceptives by their partners than boys who have more difficulties to talk about sexuality with their partner. Conversely, girls who talk easily with friends tend to use less frequently hormonal contraceptives. It might be that girls who are well protected against pregnancy and who are consequently not worried about becoming pregnant feel less the need to talk about their sexual health with friends.

The negative effect of ***peer pressure*** on sexual behaviour is evidenced by the fact that boys and girls reporting having felt peer pressure to engage in sexual intercourse are less likely to use respectively condoms and hormonal contraceptives.

2) Gender equality attitudes have a positive impact on adolescents' sexual and reproductive health and wellbeing

A cross-sectional study has been carried out among 5,913 14 to 18 years old adolescents in 20 and 6 secondary schools in respectively Cochabamba (Bolivia) and Cuenca (Ecuador). The survey assessed the predictive value of attitudes towards gender equality on adolescents' sexual behaviour, experiences and communication.

The study revealed that more egalitarian gender attitudes are related to higher current use of contraceptives within the couple, more positive experiences and ideas about sexual intercourse and better communication about sex with the partner among sexually active and sexually non-active adolescents.

The fact that individual positive attitudes towards gender equality are related to a ***higher use of contraceptives*** is not surprising within a Latin American culture, known for its machismo. Having positive attitudes towards gender equality means one breaks free from the typical male role as virile, promiscuous and dominant and from the female stereotype as being innocent, submissive and self-sacrificing. A positive attitude towards gender equality is likely to be helpful for discussing topics concerning contraceptive use.

Our research is the first in Latin America that demonstrates the association between equalitarian gender attitudes ***and positive experiences and ideas on sexuality***. We found that adolescents who are sexually active and consider gender equality as important are more likely to describe their last sexual intercourse as a positive experience than sexually experienced adolescents who are less positively inclined towards gender equality. Similarly, non-sexually active adolescents with a positive attitude towards gender equality more frequently think that sexual intercourse is a pleasant experience compared to their gender conservative peers. In our data we did not find a correlation between the gender attitude of girls and ***taking the initiative for sex***. It might be that at individual level adolescent girls may feel equal to boys, but due to powerful cultural expectations, at the interpersonal level they may consider it inappropriate or impossible to take initiative for having sex and thus seeking sexual pleasure.

3) Factorial validation of the Attitudes toward Women Scale for Adolescents (AWSA) in assessing sexual behaviour patterns in Bolivian and Ecuadorian adolescents.

The Attitudes toward Women Scale for Adolescents (AWSA) is widely used to assess gender attitudes among adolescents[23]. To date AWSA has not been employed in researching adolescent sexual behaviour in Central or Latin America countries. As part of the global CERCA research, we performed a factorial validation of this scale and assessed the relationship between gender attitudes and sexual behaviour among Bolivian and Ecuadorian adolescents. The analyses were performed on the data of the cross-sectional study conducted in 2011 among 14-18 year olds in 20 high schools and six high schools respectively in Cochabamba (Bolivia) and Cuenca (Ecuador). The number of questionnaires included in the analysis was 3,518 in Bolivia and 2,401 in Ecuador.

AWSA consists of 12 items, all of which were employed in this study[24]:

V01 Swearing is worse for a girl than for a boy.
V02 On a date, the boy should be expected to pay all expenses.
V03 On the average, girls are as smart as boys.
V04 More encouragement in a family should be given to sons than daughters to go to college.
V05 It is all right for a girl to want to play rough sports like football.
V06 In general, the father should have greater authority than the mother in making family decisions.
V07 It is all right for a girl to ask a boy out on a date.
V08 It is more important for boys than girls to do well in school.
V09 If both husband and wife have jobs, the husband should do a share of the housework such as washing dishes and doing the laundry.
V10 Boys are better leaders than girls.

[23] Byrne ZS, Felker S, Vacha-Haase T, Rickard KM. A comparison of responses on the attitudes toward women scale and attitudes toward feminism scale: is there a difference between college-age and later-life adults with the original norms? Meas Eval Counsel Dev 2011; 44: 248-64.
[24] Galambos NL, Petersen AC, Richards M, Gitelson IB. The Attitudes Toward Women Scale for Adolescents (AWSA): A study of reliability and validity. Sex Roles 1985; 13: 343-356.

V11 Girls should be more concerned with becoming good wives and mothers than desiring a professional or business career.
V12 Girls should have the same freedom as boys.

For each item, respondents were asked to indicate their level of agreement or disagreement on a Likert-type scale ranging from 1 (“strongly agree”) to 4 (“strongly disagree”). Items 3, 5, 7, 9 and 12 were reverse-scored. All scores were subsequently summed and divided by 12, producing a total score of attitudes towards women. A higher score indicated a less traditional attitude while a lower score indicated more traditional attitude.

The study showed that AWSA is a reliable instrument to analyse sexual behaviour and experiences among Spanish speaking Latin American youth. However, the explanatory factorial analysis on the total study sample revealed a three-factor solution, which accounted for 44.8% of total variance. The three resulting factors were: Power dimension (PD), Equality dimension (ED), Behavioural dimension (BD).

Factor loadings of the Principle Components Analysis and Item-Total Correlation of the Attitudes toward Women Scale for Adolescents (AWSA)

AWSA item[a]	Loadings				Item-total Correlation
	Three factors analysis			Single factor analysis	
	F1 (PD)	F2 (ED)	F3 (BD)		
V10 Boys are better leaders than girls	**0.73**	0.19	-0.09	0.73	0.60
V08 It is more important for boys than girls to do well in school	**0.67**	-0.02	0.13	0.62	0.54
V06 In general, the father should have greater authority than the mother in making family decisions	**0.64**	0.13	0.11	0.65	0.56
V11 Girls should be more concerned with becoming good wives and mothers than desiring a professional or business career	**0.63**	0.16	-0.05	0.63	0.55
V04 More encouragement in a family should be given to sons than daughters to go to college	**0.58**	0.03	0.35	0.59	0.56
V12 Girls should have the same freedom as boys[b]	0.11	**0.63**	-0.02	0.35	0.40
V09 If both husband and wife have jobs, the husband should do a share of the housework such as washing dishes and doing the laundry[b]	0.14	**0.61**	-0.20	0.34	0.35
V05 It is all right for a girl to want to play rough sports like football[b]	0.06	**0.60**	0.29	0.34	0.44
V03 On the average, girls are as smart as boys[b]	0.12	**0.51**	-0.30	0.27	0.32
V07 It is all right for a girl to ask a boy out on a date[b]	-0.32	0.37	**0.64**	-0.05	0.24
V02 On a date, the boy should be expected to pay all expenses	0.21	-0.20	**0.60**	0.20	0.32

V01 Swearing is worse for a girl than for a boy	0.15	-0.09	**0.47**	0.17	0.30

[a] Items are sorted by loadings; factor rotation converged in eight iterations.
[b] Reverse-scored.
F1 (PD) – Power dimension; F2 (ED) – Equality dimension; F3 (BD) – Behavioral dimension.

The three-factor division of the AWSA scale was shown to have better relationships with different aspects of adolescent sexual behaviour than the total score of the AWSA had.
The factor of ED showed the highest correlates with adolescent sexual behaviour. Higher scores of this dimension were associated with a more positive experience of sexual relationships, a higher current use of modern contraception and greater sexual activity among girls.
These findings are especially notable considering the need for instruments that can measure gender attitudes in replicable ways. The three-factor solution of AWSA could have great potential in future research on adolescent sexuality and gender attitudes.

4) Barriers for adolescent sexual healthcare in Latin America from the perspective of caregivers

There is an urgent need to make SRH services more responsive to the needs of adolescents in order to improve the provision of ASRH care. Expectations and perceived needs of health staff should be assessed before implementing interventions at the level of health facilities. Therefore, we elicited perceptions of primary healthcare providers in Latin America on barriers that impede adolescents' access to quality SRH care. The study is based on qualitative data collected in Cochabamba (Bolivia), Cuenca (Ecuador) and Managua (Nicaragua). During moderated discussions, 126 healthcare providers (46 from Bolivia, 39 from Ecuador and 41 from Nicaragua) shared their ideas on the accessibility and appropriateness of ASRH services and on reasons why adolescents do not make use of ASRH services. Prior to each discussion, participants were asked to provide their opinion on paper. The written answers and the discussion notes were analysed by employing a content analysis methodology.

This study identified socio-cultural, health system related and adolescent-specific factors that according to health providers affect young people's access to existing health services. The health providers pointed out several aspects related to ***socio-cultural factors and norms*** interfering with the provision of quality SRH care to adolescents. They mentioned religion, taboo on sexuality, poor communication skills and the persistent myths as barriers for adolescents to address themselves to SRH services. According to the health providers adolescents grow up in an environment where sexuality is a taboo issue with a negative effect on sharing information on sexual health at familial and educational level. However, it is striking that the health providers related on cultural aspects that hamper adolescents' access to SRH services abstracting the fact that they themselves are members of the same society, acting within the same context and thinking from the same paradigms. In the discussions ***health providers did not reflect on how their own personal perspectives*** and norms are crucial for their attitudes and behaviour towards adolescents.

Analyzing the data we had the impression that health providers easily mentioned ***factors related to how adolescents are behaving***. They stereotyped adolescents as being rebellious, impatient and irresponsible and therefore as a vulnerable and hard to reach population for SRH services. The negative perceptions of health providers on youth demonstrate the difficulties to bridge the generational gap in the adolescent – provider interactions. The ***prejudiced views of health providers on adolescents*** and their unawareness about those prejudgments might be a hampering factor for their communication with adolescents.
Participants mentioned that providers are reluctant to provide SRH services to adolescents. Health providers reported that they do not feel themselves sufficiently backed up to address adolescents SRH in daily practice. They mentioned a ***lack of clear health policies and guidelines, the non-existence of incentives and their legal vulnerability*** when seeing adolescents without the presence of a parent or guardian. However, the Ministries of Health of Bolivia, Ecuador and Bolivia have specific programs and guidelines concerning ASRH care. Similarly as in other regions of the world, health providers from our study are not familiar with the content of those programs. Furthermore it is likely that the ***poor working conditions and the job insecurity of health providers*** might have an impact on their willingness to provide SRH services to adolescents. A doctor working under the threat of loosing her or his job will be little inclined to take initiatives such as seeing unaccompanied adolescents or prescribing contraceptives to adolescents which might be criticized by colleagues, parents or superiors. Primary healthcare providers do not feel adequately trained for the provision of quality SRH healthcare to adolescents.

5) Youth perceptions of communication with parents/adult family members on sexuality

We considered perceptions of communication from the standpoint of young people as talked about in peer discussion groups, individual interviews, peer interviews and informal conversations. From the earliest stages of our research, young people expressed ***a desire to learn more from adults*** about how to negotiate romantic relationships, how to prepare for decision-making related to sex, and how to deal with issues of jealousy and control in male/female relationships.

Only looking at the answers on the survey questions related to communication one could erroneously conclude that communication within Latin-American families on sex and relationships is an all or nothing practice. However, after repeated discussion groups and in-depth interviews a more ***complex picture of communication practices*** emerged. For example, those who claimed to have open communication with their parents would nonetheless describe the precise limitations of communication that made this ‘openness’ possible. This could mean keeping a romantic relationship secret (whether sexually active or not), keeping one’s sexual status secret (virgin or not, heterosexually inclined or not), or keeping one’s knowledge of contraceptive methods and abortive methods secret (whether having used them or not). Young men and young women equally expressed these ***underlying currents of silence and evasion***, although the specifics of what could or could not be talked about were gendered.

Young people nonetheless described ***communication as circumscribed by expectations*** of certain kinds of sexual behaviours and romantic partnerships. Adolescents often mentioned the pressure to keep secret relationships with someone of unequal race/class standing or all non-platonic relationships before the age of 18 or issues related to sexual identity and sexual diversity.

Adults' advice on sexuality issues is often ***gender-specific***. Young men described uncles and fathers counselling the importance of 'respecting' and 'not harming' young women even though it was 'natural' that they would want to ask for a 'test of love' before committing to marriage. Conversely, for young women, adult family members depicted the loss of female virginity in terms of irreparable damage: once you had sex you were like a 'rose without petals,' or a 'cracked crystal vase.' Young men in all three countries pointed to direct conflicts between communications with adult men versus adult women. Specifically, young men related, from a self-aware and critical standpoint, ***the "machista" attitudes*** of the adult men in their lives. Young men often criticized their parents' and grandparents' gender norms.

The universal undercurrent of adult-youth communication, as understood by both male and female informants, was ***fear and anxiety***. For young people, they talked about the fear that their questions about sex and relationship issues would be misinterpreted as already having sexual knowledge. Young people also talked about their parent and adult family members' fears that if they spoke openly about sex, their adolescent children would misinterpret this as a green light to start having sex.

The diversity of young people and adults' opinions and expectations were most evident on the question of ***sexual 'readiness'***. The most general, and oft-repeated, advice received by young men and women was to 'wait until the right time'. While this may have been the overarching advice, the specifics of what this meant varied not only by family, but also within families. For example, one young man, (Managua), was told by his aunt he should wait to have sex until he finished high school. She suggested that once he started having sex he would have to drop out to begin preparing financially for the inevitable pregnancy. Meanwhile, his mother told him he should wait, but not because he would have to drop out of school. She argued that it was a question of good contraceptive practice with whoever his future sexual partner might be. In this instance, the two sisters (aunt and mother) disagreed about the implications of his becoming sexually active, and openly talked about these disagreements in front of the young man.

Within the living context of Latin-American adolescents, many different adults are communicating messages on issues related to sexuality. As extended families often live in close daily contact, adult family relatives are as relevant to the dynamics of communication as mothers and fathers. Furthermore, many young people live with grandparents, or aunts and uncles, as their parents work elsewhere. Consequently, young people often receive ***competing or contradictory messages*** about expected sexual behaviour and romantic partnerships.

6) Adult perceptions on advice-giving and communication

How do adults perceive the dynamics and challenges of communication on sexual issues with their adolescent or young adult children, nieces/nephews or grandchildren?

In contrast to young people whose overarching fear was that seeking to talk about sex with adult family members would be misconstrued as already having sex, adults expressed concerns that ranged from the reputational to pragmatic.

One common issue discussed in peer groups was that by talking about sex adults might expose their own inadequate knowledge of modern contraceptives. A second common fear was that by talking about sex they might 'incite' sexual activity.

Adults often described 'good' or 'open' communication in terms of having increased surveillance over the sexual behaviours and relationship choices of adolescent family members.
Conversely, some adults expressed the belief that public health or school-based education was problematic and potentially detracted from families' ability to control the sexual behaviours of their children and adolescent relatives.
The language of 'values' came up repeatedly in the research with adults as a way of indirectly critiquing the perceived aims of the project. In other instances, adult community members approached CERCA-affiliated researchers directly to voice opposition to 'open' talk on sex and sexuality with young people. In other moments, parents and grandparents in favour of CERCA expressed interpretations of project aims that were beyond the purview of a public health intervention, such as getting young people to 'respect' (read: obey) the limitations on sexual behaviour and socializing with the opposite sex as set by parents and family elders.

7) Recommendations for interventions addressing adolescents' sexual reproductive health.

The pre-intervention research resulted in some practical recommendations that have been taken into account for the development of the intervention strategy.

Recommendations for the overall intervention strategy:

- Address ASRH with a multifocal approach, taking into account the complexity of health problems and acting on different determinants.

- Enhance active participation of the involved parties.

- Make use of scientific evidence related among others to the determinants of health, the effectiveness and feasibility of interventions and behavioural theories.

- Consider the context in order to adjust the strategy. One strategy for the same problem can differ widely in its implementation according to among others its geographical, cultural, socio-economic, political environment. The nuances of local cultural norms and site-specific power dynamics related to socio-economic, racial and gender hierarchies must be taken into account. Another aspect of the contextualization is the need to develop intervention activities in line with existing health system structures and government policies.

- Involve peer participatory researchers in the early stages of the intervention process.

- Seek collaborative relationships with NGOs and other organizations already providing SRH services to young people in the intervention areas.

- Address the issue of sexual diversity;

- Address the taboo of abortion and provide information on safe abortion services where available;

- Address the taboo of violence/the silencing of sexual violence both within couples and within the home;

Recommendations for interventions targeting adolescents

- Address the interaction of adolescents with key persons from their environment

- Engage boys in the activities as they seem to take less responsibility regarding sexual health issues as contraception than girls do.

- Include actions that aim at increasing peer resistance skills, as we found that peer pressure is negatively related to contraceptive use.

- Reconsider use of Internet as primary outreach method – cell phones a more viable alternative?

Recommendations for interventions targeting the community

- Engage schools, parents, and the community in adolescent sexual and reproductive healthcare. This has the potential to both promote the existing services and create a supportive environment for adolescents to seek out those services.

- Build relationships with "community gatekeepers" in target intervention sites *before* beginning intervention activities;

- Determine needs of key sub-groups in target intervention areas before initiating intervention activities and determine which key sub-groups will be targeted and modify communication strategies accordingly.

For interventions targeting health providers

- Address the gap between health provider and young people's perceptions of SRH information and education adequacy and applicability;

- Provide counseling on contraception to adolescents addressing a health care setting. Discussing sexuality in the context of health care requires specific conditions at the level of the environment in terms of confidentiality and privacy and at the level of the health professional in terms of knowledge, attitudes and (communication) skills. Interventions addressing those conditions are likely to improve the demand and accessibility of contraceptives.

- Conduct healthcare provider-level efforts such as training activities to improve providers' skills to interact appropriately with adolescents.

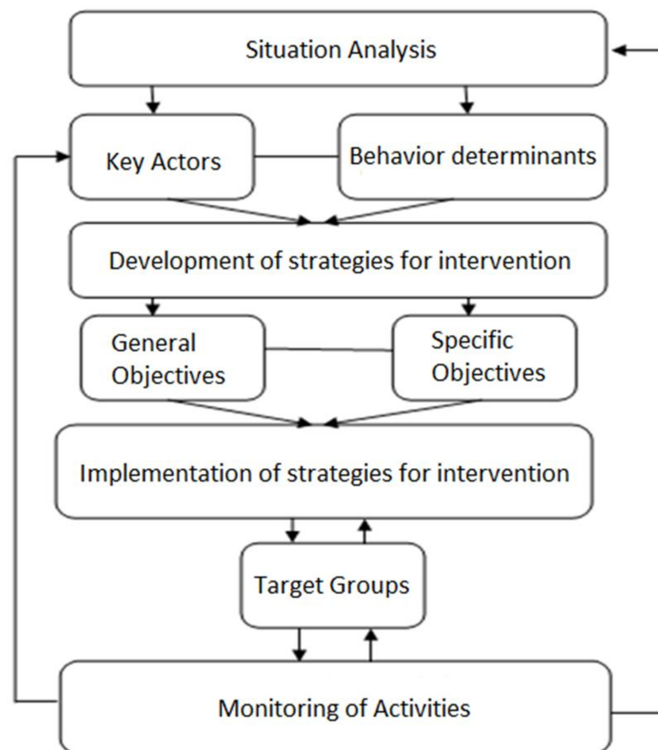
- Elaborate procedures concerning ASRH services in particular issues, such as registration and confidentiality. Written office policies seem to improve provider's knowledge of the existing guidelines and to increase the probability of adherence to these guidelines

- Influence the cultural aspects that interfere with adolescents' access to sexual and reproductive health services. The introspective reflection of healthcare providers on how their own sexual norms and perspectives on adolescents could influence their practice and performance related to the provision of ASRH could be a valuable component of educational interventions to healthcare providers.

Development and implementation of the intervention strategy

8) A methodological model for developing, implementing and testing health promoting strategies.

In order to develop, implement and monitor the intervention strategies, the CERCA consortium, developed a methodological model that could be used to tackle health problems, inclusive these that are outside the field of sexual health. The methodological model guides a complex participative process that takes into account the interaction between social, community, environmental and individual determinants that lay in the origin and solution of health problems. The developmental process has a community focus, is based on applied theories of behavioural change, is centred on personal needs and is aligned with health systems. A detailed description of the methodological model can be downloaded from the CERCA-website www.proyectocerca.org. The document is meant for Latin-American and European actors involved in the development and implementation of health interventions.



9) A strategy for promoting adolescent sexual and reproductive health in Latin America.

The **general objective** of the strategy CERCA is to contribute to the sexual health of adolescents by implementing community-embedded interventions targeted at improved access to quality primary health services, a supporting and enabling environment, and strengthened competence to make reproductive health choices.

The specific objectives have been identified based on the results of the situation analysis. Discussions in advisory board and with CERCA consortium members led to the identification of a core set of **specific intervention objectives**: 1) adolescents communicate on their SRH with parents, partners and among peers; 2) adolescents access and receive accurate information on SRH; 3) adolescents make use of SRH services within primary health care; and 4) adolescents use consistently modern contraceptive methods.

In the three study sites specific interventions were implemented targeting adolescents and key actors from their environment (parents and adult family members, health providers, local authorities and community members). The CERCA consortium had the intention to develop and implement context-specific and evidence-based interventions considering as much as possible the complexity of ASRH behavior and adopting a participatory and multidisciplinary approach. Gender was a transversal topic throughout the intervention process.

A document with a description of the global CERCA strategy for promoting adolescent sexual health can be downloaded from the CERCA website www.proyectocerca.org. The document

is meant for Latin-American actors involved in the development and implementation of health interventions addressing adolescents' sexual and reproductive health**.**

Monitoring and impact evaluation of the interventions

10) The identification of feasible and effective interventions targeting adolescents' sexual and reproductive health

a) SRH education in schools in Bolivia

According to Kirby's analytical framework[25] effective sexuality education requires certain criteria in order to increase knowledge and abilities, to influence values and attitudes and eventually to impact behaviour. Those criteria need to be taken into account at all stages:

1. The process of developing the curriculum
2. The contents of the curriculum itself
3. The implementation of the curriculum

CERCA Bolivia applied five workshops providing sexuality education to secondary school students, their parents and teachers. Sexuality education was provided in a comprehensive way, beyond the conventional purely biological approach, and focused also on topics requested by the adolescents themselves. Amongst others, following aspects related to health sexuality were discussed: communication techniques, self-esteem, gender attitudes, life project, decision taking, conflict management, adolescent – parent interaction etc.

b) Community interventions driven and guided by Friends of Youth

In Managua, due to the relatively high incidence of young people out-of-school in the selected low-income target neighbourhoods, the local consortium partner chose to carry out intervention activities at the community level (e.g. mobile cinemas, sporting events, door-to-door outreach and education campaigns). The Friends of Youth (FoY) were the driving forces of the community interventions. The idea of community interventions driven and guided by FoY (Friends of Youth) was taken from a successful project implemented by Population Council in Kenya[26]. FOY are young adults, intensively trained in SRH. They served as mentors of the adolescents in their community, helped them building their competence to make deliberate choices and when needed they referred and eventually accompanied adolescents to an appropriate health provider. Besides the one-to-one interaction with adolescents, the FoY also supported community activities including workshops, exhibitions, street theatre, movie showing and awareness campaigns. The FoY were supervised by the programme implementers of the research team. They received small financial incentives.

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[25]Kirby, D, Rolleri, L & Wilson, MM. (2007). Tool to Assess the Characteristics of Effective Sex and STD/HIV Education Programs. Washington, DC: Healthy Teen Network

[26]Ochieng B, Erulkar James Matheka Lawrence Oteba AS: Friends of Youth: A youth-adult HIV]AIDS behavior change program for urban Kenyan youth. In Population Council. Edited by Council P. Nairobi, Kenya:; 2007.

c) Use of mobile phone text messaging to improve adolescent sexual health

In Bolivia the sending and receiving of text messages through cell phones is intensively used as a means for communicating with adolescents on SRH. Nowadays, most teenagers from Any income layer has a cell phone. In Bolivia around 90% of the population has a cell phone. Previous research demonstrated that text messages are an effective tool to influence determinants of behaviour (attitudes, subjective norms, behavioural control) and induce behavioural changes[27][28][29]. The strategy in Bolivia applied two forms of using SMS. One was to send out information about SRH in a proactive SMS messaging, and the second was to receive and to answer questions about sexual health as text-based counselling service. Both ways intended to circumvent barriers for adolescents' access to SRH care services. The CERCA study demonstrated text messaging is an effective approach to bring preventive sexual health care within reach of adolescents. For the first time in Bolivia, an intervention strategy has been tested that includes Information and Communication Technologies in the area of health.

d) Interventions promoting adolescents' access to SRH services in primary health centres

The situation analysis demonstrated that adolescents´ access to sexual health services is insufficient and leads to unwanted pregnancies and unsafe abortions. Adolescents feel discomfort to address health providers for their SRH needs. Besides, many health workers are reluctant to provide SRH services, more particularly contraception, to adolescents due to a variety of cultural, social, moral and legal reasons; they feel insufficiently skilled to respond adequately to adolescents' contraceptive needs; and opening hours of health centres often conflict with school schedules. Even though adolescents may be aware of the importance of seeking professional health care for their SRH needs, the expectation or belief that they will not be attended properly or that they will be treated in an unfriendly way in the health centre may result in the adolescents not accessing a health centre and not requesting any SRH service.
In an attempt to reverse this interaction between health providers and adolescents, the CERCA strategy combined interventions inciting adolescents to access existing primary health services with activities at the level of the health centres. Health providers were trained in patient centeredness focusing on characteristics of a good provider-patient communication such as empathy, courtesy, friendliness, reassurance, support, encouraging patients' participation, giving explanations, positive reinforcement, shared decision making and patient-centred verbal styles. An educational program with role plays, videotaped vignettes of simulated patient and feedback on own recorded consultations has been implemented to teach communication skills. In order to improve other competences among providers, existing

[27] R. C. W. Perry, K. C. Kayekjian, R. A. Braun, et al. P.J. Chung, "Adolescents' Perspectives on the Use of a Text Messaging Service for Preventive Sexual Health Promotion," Journal of Adolescent Health, Vol. 51, Issue 3, 2012, pp. 220-225

[28] S. Gottheil, P. Kudlow, "Using texts for safe sex: technology in adolescent sexual health," UWOMJ (University of Western Ontario Medical Journal), Vol. 80, No 1- Health Technology, Ontario, 2011

[29] FrontlineSMS and Text to Change, "Communications for change: How to use text messaging as an effective behaviour change campaigning tool, " FRONTLINESMS, 2012

national and international guidelines on providing sexual health care services to adolescents were presented and discussed during workshops. In peer sessions they were encouraged to reflect on own attitudes, values and beliefs on adolescent sexuality and how these may affect their work with adolescents.

e) Community involvement

In Nicaragua we have witnessed the power that communities may have for achieving better health care. At the start, the interventions in the primary health centres progressed with difficulty. Health providers of primary health care centres were reluctant to provide SRH services to unaccompanied adolescents. Thereupon community committees of the concerned neighbourhoods exerted pressure on the health centres claiming the right of adolescents to receive confidential health care and incited health care providers to adapt their behaviour. The CERCA experience demonstrated that two movements are necessary to endeavour after youth sexual health services: a bottom up movement with communities and parents stimulating and compelling providers and authorities to make health care more youth friendly and a top-down approach creating a conducive environment where youth friendliness is valued.

d) Provision of sexuality counselling at secondary schools

In the course of the CERCA interventions in Bolivia, it was seen that, despite of all efforts, the access of adolescents to SRH services in primary health care centres remained low. In order to increase the number of provider-adolescent contacts it was decided to organize sexuality counselling in secondary schools. Every two weeks students of the school were given the opportunity to visit a psychologist or physician in a private and confidential room in the school. This initiative contributed largely to achieving the objective of increasing adolescents' access to SRH services and was highly appreciated by the adolescents.

11) Impact evaluation: the effect of CERCA interventions on adolescents' ease to communicate about sexuality in Bolivia:

Adolescents who participated more frequently in CERCA interventions feel more at ease to communicate about sexuality compared to their peers who participated less.

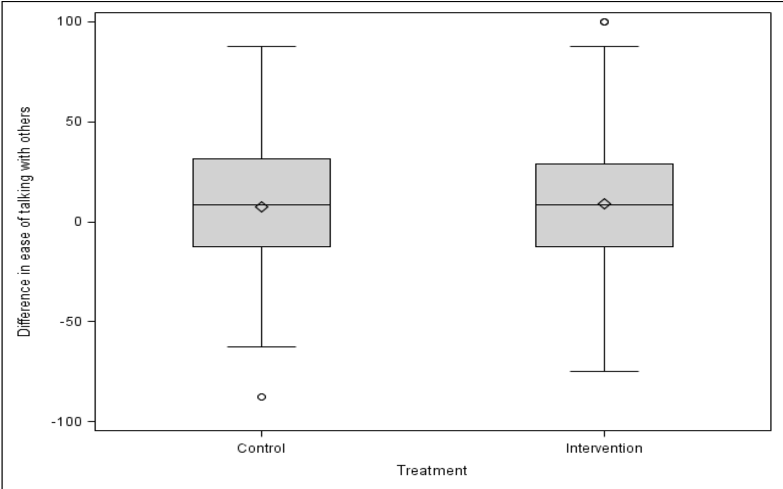
In Bolivia data of 651 adolescents were analysed. These adolescents are divided over 20 schools. Of these 651 individuals, 216 are in the control group and 435 are in the intervention group.

The outcome variable for measuring the impact of the CERCA-intervention on the ease of discussing sexuality was based on 4 items:

- ease of discussing sexuality with parents
- ease of discussing sexuality with the partner
- ease of discussing sexuality with friends
- ease of discussing sexuality with another person

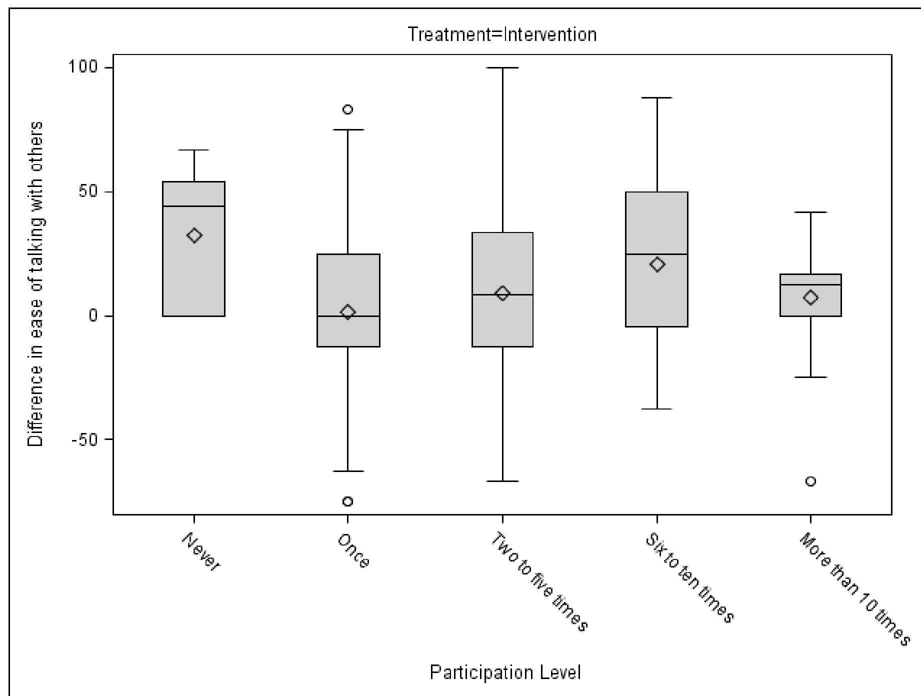
We compared the progress in communication between the control and intervention group while correcting for baseline covariates.

We didn't observe a large difference in distribution between the two treatment groups.



Distribution of difference in communicating sexuality for both treatment groups

However, in the intervention group, some of the individuals didn't participate in the proposed workshops. These individuals are called non-compliers.
In the intervention group, we notice that the highest mean outcome is observed in the group of non-compliers. A possible explanation for this is that some of these individuals didn't participate in any workshop because they are already comfortable in discussing sexuality. Within the group of compliers (who participate in at least one workshop), we notice a positive trend in the mean outcome among participation levels.



The distribution of the outcome per participation level in the treatment groups

This means that there is an association between participation and outcome in this group of individuals and that the people that more frequently participate in the workshops have a higher mean outcome. However, we can't conclude from this analysis that the participation in workshops is the cause of the higher mean progress in communication. The reason for this is that we possible look at a selective subgroup (of compliers) in the intervention group. The observed association is thus a combination of the selectiveness of this subgroup and the real causal effect (if present).
We observe a positive association between 'Equality Dimension' in gender attitudes and the outcome and between alcohol consumption and the outcome (overall p-value is 0.0019) and a negative association between age at baseline and the outcome;

Conclusion: In Bolivia adolescents who participated more frequently participate at CERCA activities communicate more easily on sexuality issues. A causal effect cannot be demonstrated. Adolescents with a more positive attitude towards gender equality feel more comfortable to talk about sexuality.

12) Impact evaluation: the effect of CERCA interventions on adolescents' condom use.

The longitudinal data in Ecuador consists of 1330 individuals. Of those individuals, only 82 have an observation for the difference in condom use between baseline and follow-up as a substantial amount of individuals are not sexually active at baseline. Of the 82 individuals that have an observed outcome, 38 belong to the control group and 44 below to the intervention group. These are very small sample sizes.

A significant association between the intervention and the mean outcome is found, but correcting for confounding covariates is not possible due to the small sample size of these data. So the results must be interpreted with caution.

In Nicaragua, the longitudinal dataset consists of 662 records. Of these 662 individuals, only 134 have answered the question about condom use at baseline and follow-up. 91 of the observed individuals belong to the control group (versus 43 in the intervention group). The treatment effect on the mean difference in condom use is not significant. Adolescents who believe that men and women are equal in terms of power seem to benefit more from interventions as far as condom use is concerned than their peers who think differently on gender equality. This result is based on a very small sample size and thus must be interpreted as an exploratory analysis.

13) Impact evaluation: the effect of CERCA interventions on adolescents' knowledge and use of health services.

Only a small part of the adolescents in Bolivia and Ecuador have consulted a health care provider, during the previous year, at the beginning of the study. The percentages of Bolivia, Ecuador and Nicaragua were respectively 16%, 19 % and 43%.
After the intervention, the percentages were higher for Bolivia (23%) and Ecuador(27%) and slightly lower for Nicaragua (42%). However, those differences could be explained by the fact that adolescents from the cohort were older when the post intervention survey took place and age is positively correlated with the use of health services.

In Ecuador, adolescents exposed to the CERCA-intervention are more likely to have a positive trend in the knowledge and use of sexual health services as adolescents from the control group.

We did not find a significant effect of the CERCA intervention on the access to health care services in Bolivia and Nicaragua.

14) Quantitative evaluation and monitoring results: some conclusions

Monitoring results in the three countries showed that the interventions were carried out as planned and that the process outcomes were achieved. In Ecuador 105,456 people were reached by a CERCA activity; and in Nicaragua 12,108 adolescents, 220 health authorities, 7160 parents, 6079 community members participated in at least one CERCA activity. In Ecuador and Bolivia more adolescents received sexual and reproductive health services in the involved primary health centres at the end of the interventions compared to the pre-intervention period.

However, the quantitative impact evaluation could not demonstrate that those interventions on their own were sufficient to increase contraceptive use among adolescents within the trial.
Nevertheless, the consortium partners felt that the CERCA interventions did have an

important societal impact on the communities where they were implemented. This societal impact has been described in the last chapter on societal implications.

It would be interesting to reflect on this gap between the perception of impact and the impact measurement and to assess further the research data to gain insight on the failure for demonstrating a quantitative impact. This deepening of the research findings might result in interesting recommendations for future intervention research.

Some hypotheses have been formulated by the CERCA researchers and are worthwhile to be investigated in the future:

- It is likely that wider societal norms related to adolescent sexual risk behaviours will need to be changed to change adolescent contraceptive behaviour.
- Consistent implementation processes and longer periods of time are needed to achieve sustainable results in community interventions. A fundamental constraint is the fact that these processes depend heavily on "willingness" instead of guidelines. Interventions should be sustained processes from the beginning and not just isolated processes.
- Cultural factors among families, communities and health staff curbed the effect of the comprehensive interventions.
- Sexuality is still a taboo in society and hence is not a priority in education or health policies. This hinders implementation and training on topics of sexuality. An example is the Cochabamba Departmental Education Directorate (DDE), which is responsible for implementing the topic of sexuality under modern and common objectives and contents according to the needs of adolescents in schools, but has failed to do so because it is not a priority, even though relevant laws are in place.
- The cultural norms and practices, the complex behaviours and motivations, of the people in charge of program and policy decision-making, and of health service delivery are a limiting factor. Facilitators themselves often required just as much “working out” of their beliefs and cultural assumptions regarding sex and relationships as did the parents and adolescents we targeted. It would be innovative to use a methodological approach that allows implementers of ASRH interventions to reflect introspectively on how their own sexual norms, perspectives on adolescents and vocational attitudes influence their performance. Studies support including self-awareness training and reflective learning in professional education.
- The interventions targeting at changing behaviours have been mainly focused to individual factors. An important determinant that came up at several occasions within the CERCA research project is the expectation adolescents have of other people’s behaviour including their partner, parents, family members, teachers, health providers, religious leaders etc. As a result, any decision adolescents take with respect to their sexual and reproductive behaviour should be seen as a resultant of these expectations and their possible outcomes. For example, even though adolescents may be aware of the importance of using contraception, the expectation or belief that health care providers will refuse to prescribe oral contraceptives may result in the adolescents not requesting any contraception. At the same time, the fact that adolescents have no demand for contraception may reinforce existing attitudes and beliefs opposing increased access for

adolescents to contraceptives, making it a classic example of a vicious circle. It is likely that interventions that act upon the dynamics between people, for instance by addressing interactions or mutual expectations among actors, are more effective for changing behaviours than interventions only addressing intrapersonal factors.

15) Conclusions from qualitative assessment of the CERCA interventions.

a) There is a need for **non-hierarchical "spaces of dialogue" on issues of sex**, sexuality and relationships, both uni-generational and multi-generational. Both young people and adults, in each round of the peer group discussions and in formal and informal interviews, communicated their desire for more opportunities to talk about these issues with the support of a facilitator. Young people especially said they wanted to go beyond lectures on condoms, STIs and unwanted pregnancies and get a better handle on how to deal with their romantic and/or sexual relationships. Parents (and grandparents charged with looking after adolescent grandchildren) expressed a desire to have more support in learning how to better talk about these issues in their homes. This kind of learning is particularly well suited to the "family talks" (*abordajes familiares*), "home visits" and conversations in community committees *(comités comunitarios),* which were well received by community members. Although these are not high-cost methodologies, they are time intensive.

b) **Participatory methodologies** are crucial to the development of relationships of trust, and to the exploration of sensitive topics such as adolescent sexual behaviors and sexual norms. We recommend that any future ASRH intervention use participant methodologies to better understand local perceptions and ASRH needs at the earliest stages. With that said, the participant methodologies used in CERCA would have benefitted from having semi-professional peer educators, like those used in Managua, as co-recruiters and participant motivators in all sites. As all ethnographic methodologies used in this project required the voluntary participation of informants, including the proviso that they could drop out at any time, substantial effort was required to keep participants involved over the life of the project.

c) In a multi-country intervention such as CERCA, where each country partner developed specific program activities and strategies responsive to the particularities of their socio-cultural contexts and to the disciplinary strengths of each team, the qualitative research would have benefitted from a team of **researchers unaffiliated with the intervention**, one at each site. This would help to encourage key informants and discussion group participants to share their critiques and perceptions of the project more openly.

d) Future ASRH projects involving health professionals and educators would benefit from a **'values clarification' process in advance** of intervention design and implementation. Such a process, borrowing from the experience of organizations such as IPAS, (http://www.ipas.org/en/Resources/Ipas%20Publications/Abortion-attitude-transformation--Introduction-to-abortion-values-clarification-and-attitu.aspx) could help identify values conflicts within a given project that might impact on the ways that ASRH gets talked about and communicated to young people.

e) Future ASRH interventions in the Latin American region seeking to improve parent-child communication on sexual risk-taking or contraceptive use should expand their defined target groups to account for **the extended family networks** in which adolescent sexualities are informed, surveyed and interpreted. Public health interventions should be sensitive to the multiplicity of discursive strategies used by both adults and adolescents to convey and contest sexual behavioral expectations, and to the social worlds in which this communication takes place.

The impact of the CERCA project

Bridging the gap between research and policy

Context

The recent increasing international interest in and commitment to evidence-informed policy dialogue and processes originate from the willingness to improve development policy and practice. Much is true in the field of health where research evidence is used by policy makers to prepare health policy briefs or to formulate national health policies. The research dissemination remains nevertheless unidirectional and therefore it is key - apart from translating research findings into policy relevant strategies or interventions once the research is final - to involve policy making stakeholders (including civil society organisations and the media) from the start and to mentor them in how to plan research, how to assess the results and how to apply the research evidence.
Recent publications promote the uptake of evidence-based interventions as a priority for researchers, practitioners and policy makers[30] and encourage institutions and organisations to enhance the capacity to apply research evidence in policy-making. Strengthening the research-policy dialogue and institutionalising evidence-based policy-making in developing countries are proposed in order to go beyond the dissemination of research findings and to enhance the capacity to apply research evidence when formulating policies[31][32].

In order to increase the responsiveness of research to existing health policy concerns, the CERCA proposal envisaged involving policy-makers (politicians, civil servants, health policy advisors, health system managers) in the research process as from the beginning. Policy-makers are often not schooled in research, but their participation and buy-in into the action

[30] Haines A., Kuruvilla S., Borchert M. (2004), Bridging the implementation gap between knowledge and action for health, in Bulletin of the World Health Organisation, October 2004, Vol. 82, pp. 724-732.
[31] Jones N., Jones H. and Walsh C. (2008), Political science? Strengthening science-policy dialogue in developing countries, ODI Working Paper 294, Overseas Development Institute, London.
[32] Becerra-Posada F., Kennedy A., IJsselmuiden C. (2008), Best Practices in Health Research Policy Development – Lessons from an expert consultation, COHRED Record Paper 8, Council on Health Research for Development, Geneva.

research process helps to better appreciate the implications of research findings and to ensure that the evidence is taken into account for policy formulations. It is believed that face-to-face interaction and deliberation between the consortium researchers and the local and national policy-makers will have an added value for the research outcomes.

Actions

A separate work package has been dedicated to bridging the gap between research and policy-making. At the beginning of the project in each country, a current situation analysis was made within the framework of the health model and existing SRH policies related to adolescents. As a complement to this situation analysis a political mapping of stakeholders was prepared according to their relevance and position in relation to SRH and adolescents. Similarly, other compatible and complementary initiatives were identified at regional and international level to explore interaction or collaboration.
Based on this preparatory work, national and community boards consisting of stakeholders active in the area of health have been established. At the national level, staff from Ministries of Health and international and local NGOs active in the health sector were invited to participate, while at the local level community leaders, religious leaders, non-governmental organisations, youth educators, and parents were involved. The boards met frequently to discuss the continuous process of understanding and intervening which is inherent to the action research approach. The hypothesis was that the active involvement of local and national policymakers contributes to an increased policy impact of the research. All partners succeeded to involve - to a certain extent - policy-makers and stakeholders in the CERCA project. However, the method and the degree of integration of policy-makers into the project differed significantly among the three countries

The project results were presented in national and international academic and community settings, targeting scientists, policy makers, health service providers and the public in general. In the final phase of the project, scientific publications and policy documents were prepared and disseminated, a final conference was organized and new proposals for scaled up interventions and further research were developed and submitted to international agencies, including UNFPA, Europaid, PAHO-WHO, Bill and Melinda Gates foundation and the Global Fund.

Results

The three participating countries achieved, to a greater or lesser extent, impact results related to:

- Awareness raising and sensitising the population on adolescent sexual and reproductive health and more particularly on teenage pregnancy, generating commitment and promoting the role of different stakeholders in the respective advocacy areas.
- Forging alliances among stakeholders for developing activities related to adolescent sexual and reproductive health as a modality to ensure the necessary cooperation for the sustainability of the CERCA interventions.

- Presenting and disseminating CERCA results at global and regional SRH-related events. As a result, experiences in the implementation of the project are available for the design of SRH public policies and interventions that take advantage of the lessons learned and the model validated by CERCA in different contexts and realities that transcend the countries where the project was originally implemented.

Main achievements in Ecuador:

- Establishment of a sexual and reproductive health network in the Cuenca canton with a budget yearly of $264,000 provided by the municipality.
- Establishment of a differentiated health centre for adolescents in a primary health centre
- In collaboration with the Ministry of Public Health following measures have been taken to improve the delivery of sexual and reproductive health services to adolescents in all primary health centres in Cuenca:
    - Differentiated timetables in primary health centres with the purpose to provide health care services to adolescents according to school hours.
    - Provision of adolescent health care services 7 days a week.
    - Delivery of emergency contraceptive packages and placement of implants following staff training in collaboration with CERCA.
- CERCA collaborators contributed to the ENIPLA strategy (national strategy for family planning and adolescent pregnancy prevention) and were also involved in initiatives related to the provision and delivery of contraceptives.
- Creation of a Chair in Sexual and Reproductive Health, which guarantees the continuation of the training of health care providers in SRH. This Chair has the aim to update rotating staff and train health professionals and other stakeholders, as well as the Ministry of Education staff at local level on SRH.

Main achievements in Bolivia:

- The CERCA approach for sexuality education will be implemented in the Cochabamba school system as of 2014.
- The differentiated health care for adolescents in Solomon Klein Hospital, which was implemented as part of the CERCA intervention will be maintained after the finishing the project. The continuity is guaranteed as the SRH will be provided by medical students during their internship in the hospital.

Main achievements in Nicaragua:

- An agreement has been made with the Dutch Embassy of the Netherlands in Nicaragua to undertake joint activities addressing adolescents' well-being.
- The CERCA database is at the disposal of students for their thesis.
- The official from the ministry of health who is in charge of the adolescent component of the family and community health model (MOSAFC) committed himself to continue the support for CERCA related activities in the future.

Main achievements at international level:

- International organisations are keenly interested in the results of the CERCA project, as evidenced by the requests for information, project visits and contacts with the project coordinators regarding the results of the projects.
- CERCA researchers have been invited to international meetings as experts in adolescents' sexual and reproductive health:
    - WHO, Geneva, Switzerland, 21-22 October 2013: review meeting for the research protocol of the multicentre "Global Early Adolescent Study" led by the Johns Hopkins Bloomberg School of Public Health and the Department of Reproductive Health and Research of the WHO.
    - UNFPA, Brussels, Belgium, 30 October 2013: Key note speech at the launch in Brussels of the 2013 State of World Population Report: motherhood in childhood, facing the challenge of adolescent pregnancy
    - WHO, Ankara, Turkey, 17-18 February 2014: meeting for the protocol development of the WHO research: "Averting unintended pregnancy among adolescents-research protocol development".

- Following the final CERCA conference in Ecuador, the declaration of Cuenca and online petition "Improve Sexual and Reproductive Health of Adolescents in Latin America" (http://chn.ge/1fobtSN) has been launched the 14th of March 2014. Over 500 supporters from all corners in world including scientists, field workers, medical personal, and authorities signed the petition.
- Amongst others, following international organisations and research institutes expressed their interest in the CERCA research and consider collaboration in the future:

  Department of Reproductive Health and Research of the WHO; United Nations Population Fund: Latin America and the Caribbean Regional Office; LuxDev: the Luxembourg bilateral cooperation institute; Johns Hopkins Bloomberg School of Public Health; Latin American Association of Pediatrics (ALAPE); Confederación de Adolescencia y Juventud de Iberoamérica y el Caribe (CODAJIC)

Dissemination of the research progress and results

From the onset of the project, a communication strategy has been developed and implemented.

During the implementation of the project, **the broad community** has been continuously informed on the progress of the research and the generated results. Informative materials, videos, radio and TV spots were designed. A general website (www.proyectocerca.org), a website for CERCA Ecuador (http://proyectocerca.webs.com/) and a specific website for the final conference in Cuenca (www.proyectocerca.com) were developed and regularly updated with project information, background documents, research results and tools. The three countries created an own facebook page which were frequently visited. E-mail messages and

SMS were used for informing adolescents and the overall community. Nine newsletters have been published and sent to the interested contacts. The CERCA project has been widely covered by local and national press over the past four years. Dozens of articles related to the CERCA project has been released and CERCA collaborators have been many times invited for radio and TV programs.

Besides the general public many dissemination efforts were made targeting **specific audiences**: (i) policy-makers and decision makers in the health sector (Ministry of Health, international health organisations); (ii) key stakeholders (general practitioners, health facilities and their staff, health management and planning coordinators,…) and (iii) the (inter)national scientific community.

Efforts have been made to publicize the CERCA project **beyond the national borders** of the three countries where it was implemented.
Articles have been published in peer reviewed international scientific journals. Other scientific articles are still I progress. Most of these publications are freely accessible through Open Access. Results of the CERCA project have been disseminated at international conferences throughout the implementation of the project. Policy documents have been developed disseminated and can be freely downloaded from the websites.

The dissemination activities have positioned the CERCA consortium as a reliable ally in the promotion of and research on adolescents' sexual and reproductive health. Moreover, the dissemination efforts clearly succeeded in placing the topic ASRH on public and politic agendas locally, nationally and internationally.

Main results

Internet-based monitoring indicators

- The Cochabamba team delivered 11189 e-mails with information related to the CERCA project. From those delivered e-mails 1292 (7,2%) were opened by the receiver.
- From 30-6-2010 until 16-1-2014, the CERCA website (www.proyectocerca.org) has been visited 19000 times, mostly from Latin American countries
- In the same period, the Ecuador webpage (www.proyectocerca .webs.com) has been visited 12167 times.
- From November 2011 until July 2013 the Bolivian facebook received 121 likes. In Ecuador the CERCA team received 204 questions through facebook, while 99 in Bolivia. In the Bolivian facebook respectively 86 links and 305 pictures have been shared. In Bolivia 777 comments were posted.
- The fact that information on the CERCA project can easily be searched through Google, demonstrates that CERCA is globally spread over the internet. Googling the term "community-embedded reproductive health care for adolescents" generated approximately 41600 results (28th of April 2014). Entering separately the search terms - reproductive

health adolescents Latin America- in Google automatically generates a hit list with many references to the CERCA project.

Three **videos** were produced presenting the CERCA project, aspects of ASRH and perspectives of actors:

1. Voces de Cuenca: http://www.youtube.com/watch?v=L8o0kFfUddY
2. Tres Generaciones: http://www.youtube.com/watch?v=lzFImeUWxvg
3. The CERCA project in Nicaragua: youtu.be/cXzx5rzdlc8

These videos can be accessed, free of charge, at You Tube.

Following **policy documents** have been published disseminated and can be downloaded from the CERCA website (www.proyectocerca.org):

1) Three country reports on the CERCA study (English and Spanish)
Description: Those reports describe different components of the CERCA project in the three countries: 1) situation analysis of adolescents' sexual health; 2) the applied methodology; 3) the CERCA strategy; 4) the implementation of this strategy; 5) the results of the implementation; 6) recommendations. Those document aim at offering a practical resource to the actors of the different levels of the health and educational system. The critical analysis of the different components of the CERCA Project generates useful criteria and knowledge on how to develop, implement and monitor strategies promoting adolescents sexual and reproductive health.

2) A comparative study report on adolescents' sexual and reproductive health situation in Bolivia, Ecuador and Nicaragua
Description: The report describes determinants of SRH problems of adolescents in Latin America and is based on data collected from different documental sources

3) A strategy for promoting adolescent sexual and reproductive health in Latin America
Description: A description of the global CERCA strategy for promoting ASRH that was implemented in the three Latin American countries. The document is meant for Latin-American actors involved in the development and implementation of health interventions addressing adolescents' sexual and reproductive health.

4) A methodological model for developing, implementing and testing health promoting strategies
Description: A report on the methodological model for developing, implementing and testing health promoting strategies used in the CERCA project. The document is meant for Latin-American and European actors involved in the development and implementation of health interventions. We aspire that this document will be useful at different levels of health systems including for local health authorities planning to improve the quality of primary health care services, for authorities from ministerial departments developing campaigns on whatever health topic, and for program officers of international organizations promoting health.

5) Assessment Report on the use of Internet for Awareness Raising Activities
Description: An important aspect of the CERCA Project was the use of technology. Although the three developing countries face several challenges the CERCA project showed that technology could be of great help for promoting safe sexual behaviour.

6) A qualitative analysis of the CERCA interventions promoting adolescent sexual and reproductive health in Latin America
Description: The report describes the implications of a 'community-embedded' approach on the polemical issue of adult-adolescent communication on sexual issues. Through the use of ethnographic methods and sustained engagement with communities targeted by the project, we concluded that the adults and adolescents in question were engaged in dynamic processes of negotiation and contestation over what aspects of sex could or could not be talked about, which adult family members should or should not take responsibility for having the 'sex talk,' and what the consequences – intended or not - of open communication on sex might be.

7) Quantitative impact evaluation of Community embedded reproductive health interventions for adolescents in Bolivia, Ecuador y Nicaragua
Description: Report on the impact of the CERCA intervention in three Latin American countries on adolescent's behaviour with regards to: 1) access to accurate information on SRH (sexual and reproductive health);2) degree of comfort and extent of communication on issues of sex and sexuality; 3) use of existing SRH services; and finally,4) use of modern contraceptive methods and condom use.

8) Translation of CERCA research in policy measures
Description: the CERCA project implemented a strategy to bridge the gap between research and policies by promoting the participation of national and local authorities, as well as decision-makers. This paper presents the strategy followed in the countries of Nicaragua, Ecuador and Bolivia, the results achieved and lessons learned.

Scientific articles published in peer-reviewed scientific journals:

1) Decat P, Nelson E, De Meyer S, Jaruseviciene L, Orozco M, Segura Z, Gorter A, Vega B, Cordova K, Maes L, Temmerman M, Leye E, Degomme O. Community embedded reproductive health interventions for adolescents in Latin America: development and evaluation of a complex multi-centre intervention. BMC Public Health. 2013 Jan 14;13(1):31.

2) Jaruseviciene P, Orozco M, Ibarra M, Cordova Ossio F, Vega B, Auquilla N, Medina J, Gorter A, Decat P, De Meyer S, Temmerman M, Edmonds A, Valius L, Lazarus J. Primary healthcare providers' views on improving sexual and reproductive healthcare for adolescents in Bolivia, Ecuador, and Nicaragua. Glob Health Action. 2013 May 6; 20444

3) Lina Jaruseviciene, Sara De Meyer, Peter Decat, Apolinaras Zaborskis, Olivier Degomme, Mildrett Rojas, Arnold Hagens, Nancy Auquilla, Bernardo Vega, Anna C. Gorter,

Miguel Orozco, Jeffrey V. Lazarus. Factorial validation of the Attitudes toward Women Scale for Adolescents (AWSA) in assessing sexual behaviour patterns in Bolivian and Ecuadorian adolescents. Glob Health Action. 2014 Vol 7

4) Nelson E, Howitt D. Reprod Health Matters. When target groups talk back: at the intersection of visual ethnography and adolescent sexual health. 2013 May;21(41):45-8.

5) Kathya Cordova Pozo and Arnold J.J. Hagens Information and Communications Technology in Sexual and reproductive health care for Adolescents: A Bolivian Case Study, GSTF digital library. (not peer reviewed)

Scientific articles submitted to peer-reviewed scientific journals and likely to be accepted for publication after revision:

1) Decat P, De Meyer S, Jaruseviciene L, Orozco M, Ibarra M, Segura Z, Medina J, Vega B, Michielsen K, Temmerman M, Degomme O. Intrapersonal and interpersonal factors of sexual onset and contraceptive use among adolescents in Nicaragua. Submitted to the European Journal of Contraception and Reproductive Health Care
2) De Meyer S, Jaruseviciene L, Zaborskis A, Decat P, Vega B, Cordova K, Temmerman M, Degomme O, Michielsen K. Positive attitudes towards gender equality go hand in hand with a safe and happy sex life among adolescents: results from a cross-sectional study in Bolivia and Ecuador. Submitted to the Journal Global Health Action

3) Nelson E, Ballesteros M, Encalada D, Rodriguez O, Edmonds A. The Unintended Consequences of Sex Education: An Ethnography of a Development Intervention in Latin America. Submitted to the Journal Anthropology & Medicine.

Scientific articles in progress which we be shortly submitted to peer-reviewed scientific journals:

1) Decat P, De Meyer S, Jaruseviciene L, Ibarra M, Auquilla N, Cordova F, Segura Z, Gorter A, Nelson E, Jaruseviciene L. Barriers for adolescent sexual healthcare in Latin America: perspective of caregivers. Submitted for review to Sexual Health.

2) Sexual Communication in Conflict: an analysis of the community in a "community-embedded" health intervention

3) Evidence-based practices for adolescents: conclusions from the International Congress on Promoting Sexual and Reproductive Health, February 11 to 13, 2014 in Cuenca, Ecuador

Final international conference:

Cuenca – Ecuador was the seat of the International Conference PROMOTING SEXUAL AND REPRODUCTIVE HEALTH FOR ADOLESCENTS on February 11, 12 and 13, 2014.

The conference targeted at health-care professionals, technical staff, counsellors, social workers, students, academicians, communicators, educators, adolescents, parents and members of the communities interested in the subject. The conference included lectures, forums and round tables.
Overall 45 speakers (26 Ecuadorian and 19 international experts) presented diverse aspects of ASRH: determinants of ASRH, sexual health promoting strategies, health policies, and adolescents' access to SRH services, adolescent sexuality, sexuality education, and adolescents' SRH rights.
Over the three days, more than 800 people attended the conference. Results and outputs from the CERCA research in the three countries have been expounded at several occasions
The congress programme and further information is available online at: www.proyectocerca.com.

The event gathered interested people, experts and professionals from different countries, including representatives of ALAPE (Latin American Association of Paediatrics, Adolescence Unit), CODAJIC (Confederation of Adolescence and Youth of Latin America and The Caribbean), UNFPA (United Nations Fund for the Population), WHO, the Network of Sexual and Reproductive Health of Canton Cuenca, ENIPLA Strategy (National Inter-sectorial Strategy for Family Planning and Pregnancy Prevention in Adolescents), Ministry of Health, Ministry of Education and the Ministry of Social and Economic Inclusion.

Exploitation of results

The CERCA partners are looking for new resources to reap the harvest of the CERCA project. The consortium is convinced that the results and outputs of the CERCA research can be potentiated by exploring further the CERCA findings with complementary research. Similarly, we are looking for funding to scale up activities that have proven to be effective and to address the barriers that have limited the effectiveness of the interventions.

Therefore, the following actions have been undertaken:

1) Grant application submitted in response to the EuropAid call "Promoting sexual and reproductive health and rights — universal access to reproductive health" (Ref. DCI-SANTE/2013/379)

Community-embedded contraceptive services for adolescents in Nicaragua

Based on the results of the CERCA research we propose to undertake health system and community based actions in order to increase the use of contraception among adolescents in Nicaragua. We aim to achieve this general objective by addressing barriers related to 1) the need-demand gap of adolescent contraception; to 2) adolescents' access to contraceptives at primary health centres and to 3) the community environment. Adolescents' access to contraceptives was one of the most critical components for the impact of the CERCA

interventions. The CERCA study identified barriers for adolescents' access to contraception. This knowledge will allow addressing those barriers properly. The rationale for the third specific objective is related to the well-established impact of the social environment on individuals' behaviour and the prominent role of the community in the organisation and surveillance of health services which is ingrained in the Latin American context.

Result of action: The proposal has been reviewed by the EC and we obtained a very good score (35/40). However, this score was not sufficient for the proposal to be selected for the next round. The consortium will watch out for new grant opportunities to

2) Development of two proposals for the "Grand Challenges Explorations" call of the Bill and Melinda Gates foundation.

a) Adolescent DRIven Access to COntraceptives (ADRIA CO)

The CERCA research showed that one of the main barriers for adolescents' access to contraceptives is the fact that repeated contacts with health providers are needed for the prescription and administration of modern contraceptives.
The installation of a dispenser that gives adolescents more direct access to contraceptives is an innovative alternative to switch from provider-dependent provision of contraceptives to an adolescent-driven access. We assume that installing contraceptive dispensers in public areas which are easily accessible for adolescents, will lead to a higher contraceptive use by adolescents and consequently to a lower incidence of adolescent pregnancy.

Virtual outreach: health providers offering contraceptive services through new media.

Proposal in progress that will be submitted in response to a new "Grand Challenges Explorations" call of the Bill and Melinda Gates foundation.

Traditionally, sexually active adolescents with a contraceptive need have to address themselves to health centres to express their demand. The idea for this proposal is to reverse this in order to overcome the barrier of adolescents' access to health services. Through the use of new media (e.g. SMS, facebook) health providers themselves will contact adolescents offering contraceptive services.

Results of action:
The proposal ADRIA CO has not been accepted for funding. The contraception dispenser idea will be recycled for new proposals.
The proposal *virtual outreach* is still in progress

4) Development of a summary document for funding agencies with interest in ASRH. The document presents the CERCA research and formulates concrete ideas for potentiating the

CERCA results and outputs by investigating the CERCA findings with complementary research.
This document has been sent to following organisations: UNFPA, Luxembourg bilateral cooperation institute (LuxDev), the Fund Maria-Elisa & Guillaume De Beys managed by the King Baudouin Foundation.

Results of action: UNFPA and LuxDev expressed their interest and will consider the request.
Fund De Beys: pending

5) Development of a research proposal for the WHO.

Development of a game theory model of adolescent sexual and reproductive behaviour

Based on the knowledge generated by the CERCA project as well as other research, behavioural models can be developed that predict the dynamics of decision-making processes with respect to adolescent sexual and reproductive health, in particular the use of contraception. We therefore propose to develop such a model making use of game theory techniques which we believe would be an innovative approach and will approximate to a greater extent the complexity of human behavior by integrating 1) contextual, interpersonal and intrapersonal factors; 2) different key actors; and 3) the dynamic and multilevel interactions between factors and actors.

The general objective of the project is to contribute to the development of effective strategies to reduce teenage pregnancies by increasing knowledge on adolescents' contraceptive behaviour.
The specific objectives are:
1. To construct a game-theory model predicting adolescents' contraceptive behaviour
Result 1.1: A model that predicts adolescents' contraceptive behaviour
Activities:

Further analysis of existing CERCA data (months 1-4)

Estimation of values attributed to specific outcomes (months 3-4) In order to determine these, we will conduct focus group discussions with all stakeholder groups (adolescents, parents, health care providers, community leaders) and key informant interviews.

Result 1.2: The validation of the model through new field research
Activities:

Surveys among adolescents and relevant key actors (months 5-7)

Analysis of data and model adjustment (month 8)

2. To formulate recommendations for effective interventions improving the use of contraception among sexually active adolescents in Latin America
Activities:

Elaboration of model-based recommendations (months 9-10)

The total duration of the project is estimated to 10 months and would tentatively start in the second half of 2014.

Results of action: The negotiation with the WHO is in its final stage. Approval of the extension research project is likely.