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Sexual onset and contraceptive use among adolescents from poor neighbourhoods in Managua, Nicaragua

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ABSTRACT

Background and objectives The prevalence of teenage pregnancies in Nicaragua is the highest in Latin-America. This study aimed to gain insight into factors which determine the sexual behaviours concerned.

Methods From July until August 2011, a door-to-door survey was conducted among adolescents living in randomly selected poor neighbourhoods of Managua. Logistic regression was used to analyse factors related to sexual onset and contraceptive use.

Results Data from 2803 adolescents were analysed. Of the 475 and 299 sexually active boys and girls, 43% and 54%, respectively, reported contraceptive use. Sexual onset was positively related to increasing age, male sex, alcohol consumption and not living with the parents. Catholic boys and boys never feeling peer pressure to have sexual intercourse were more likely to report consistent condom use. Having a partner and feeling comfortable talking about sexuality with the partner were associated with hormonal contraception.

Conclusions Our data identified associates of adolescents' sexual behaviour related to personal characteristics (sex and alcohol use), to the interaction with significant others (parents, partners, peers) and to the environment (housing condition, religion). We interpreted those associates within the context of the rapidly changing society and the recently implemented health system reform in Nicaragua.

KEYWORDS Adolescents; Nicaragua; Contraception; Pregnancy in adolescence; Sexual behaviour; Latin America

INTRODUCTION

Teenage pregnancies in Latin-America are linked to a higher incidence of maternal complications during pregnancy and delivery[1] and children of adolescent mothers are at increased risk of preterm birth, low birth weight and neonatal mortality[2]. In many cases, the context in which adolescent pregnancy occurs makes it difficult for the young mother to complete school and leads to adverse socio-economic consequences[3].

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The prevalence of teenage pregnancies in Nicaragua is the highest in Latin America with an adolescent fertility rate (births per 1000 females aged 15–19) of 109, compared to the Latin American average of 79 births[4]. Almost half of Nicaraguan women aged 20 to 24 gave birth for the first time before their 20th birthday and nearly half of these pregnancies were unwanted[5]. Furthermore, it is likely that in Nicaragua many pregnant teenagers are seeking unsafe and risky backstreet abortions, as abortion is prohibited under all circumstances[6].

In Nicaragua, there is an urgent need for effective strategies to reduce the number of teenage pregnancies. To develop such strategies drivers of adolescents' sexual behaviour and contraceptive use must be identified. In Latin America teenagers initiate sexual activity at ever earlier ages and only few sexually active youths take any measures for preventing pregnancy[7].

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[8]. In the literature we found evidence that age, residence, education level, gender norms, socio-economic status and access to health services are important intrapersonal predictors of adolescent sexual and reproductive health (ASRH) in Nicaragua as elsewhere in Latin America[9–11].

In our opinion, previous assessments of ASRH in Nicaragua focused mainly on personal determinants, disregarding the role of significant others and the socio-political context. Firstly, the role of the family and the community remains pivotal in the daily life of most Nicaraguans[12], despite the individualising forces coming along with the current globalisation wave. Consequently, it is likely that interpersonal factors have an important effect on adolescents' sexual behaviour. Secondly, Nicaragua passed through many changes at political level over the last decades. In 1979, the Sandinista Revolution put an end to the Somoza dictatorship and initiated leftist reforms. After seven years of civil war a conservative coalition government, elected in 1990, initiated economic adjustments policies and reduced basic social services such as health and education. Since the elections of 2006 the Sandinistas have come again into power and are implementing new social reforms. However, the current politics are not clear-cut and the policy-making concerning ethical issues is strongly influenced by the Catholic and Evangelic churches which resulted in a complete ban on abortion even in the case of rape or a life-threatening pregnancy[6]. In all probability the unique societal environment in Nicaragua has repercussions on ASRH. A better understanding of intrapersonal, interpersonal and environmental factors will contribute to appropriately shape specific interventions.

To assess associates of youths' sexual behaviour and contraceptive usage in Nicaragua we analysed data from a survey conducted among adolescents living in poor neighbourhoods of the capital city, Managua. We intended to generate baseline data for the intervention study "community-embedded reproductive health care for adolescents" (CERCA)[13]. The CERCA project is a multicentre study coordinated by the International Centre of Reproductive Health (ICRH) of Ghent University which aims at developing and evaluating complex interventions that seek to improve access to- and use of sexual and reproductive health (SRH) services by adolescents.

POPULATION AND METHODS

Selection of study sites

In Nicaragua, the intervention research project which includes this study was conducted in Managua, in areas with more than 50% poor people as defined by the Unsatisfied Basic Needs index (UBN)[14]. It was decided to address teenagers living in poor neighbourhoods as they are particularly vulnerable concerning their SRH[1,5]. In 2006 Managua counted 934,489 inhabitants with 206,247 adolescents aged between 10 and 19 years, 81,527 of whom lived in a town district with more than 50% poor people (UBN)[15]. The random sampling of town areas has been extensively described in a previous article; it is based on the calculations for a cluster randomised control study measuring the impact of interventions on contraceptive use among adolescents[13]. A list with population data of all the town areas in Managua based on a census of 2005, was obtained from the municipality. From this list, 33 town areas met the following criteria: more than 50% poor people (UBN) and a number of inhabitants between 1400 and 4500. We employed the latter criterion as the inclusion of very large or very small town areas might have complicated the implementation of the interventions. From these 33 town areas identified, 18 were randomly selected for this study.

Data collection

The study had a cross-sectional design. The data were collected in July and August 2011 through a door-to-door survey aiming to include all adolescents aged 13 to 18 who lived in the 18 randomly selected town areas. The lower age limit was chosen as it was not possible to get ethical approval for surveying subjects younger than 13 years of age. Trained interviewers went to all the houses, asked the person at the door the number of youths aged 13 to 18 living in the house, and invited them to participate in the survey. If the adolescent was absent and could not be located, the interviewer returned once on the next day. The teenagers concerned and the responsible adults were briefed about the purpose of the study and were assured that their responses would remain confidential. They were also informed that participation was voluntary and that they could withdraw at any time. After obtaining verbal consent from the adolescent and the responsible adult the interviewer and the adolescent sat apart and proceeded with the questionnaire. If there were several youths aged 13 to 18 in a family the questionnaire was administered one at a time. The teenagers self-administered questions directly related to sexual behaviour.

The questionnaire was designed by CERCA consortium members based on the illustrative questionnaire for interview-surveys with young people conceived by John Cleland for the World Health Organization[16]. The questionnaire contained 59 questions on socio-demographic characteristics, relationships, communication skills, information-seeking behaviour, use of existing SRH services, reproductive history and sexual behaviour. Table 1 presents the variables used for this study. The questionnaire was pilot-tested among 30 adolescents from non-selected eligible study sites to check the potential ambiguity and difficulty in understanding and responding to the questions, the clarity of the instructions given, the design of questionnaire, etc. Minor language revisions and small changes in the design were made after this pilot testing.

Statistical analysis

Completed questionnaires were entered twice using Epi Info™ 7 (CDC, Atlanta, GA, USA). The cleaned database was forwarded for statistical analysis by means of SPSS Statistics version 20 (IBM Corporation, New York, USA) and R version 3.0.1.

The analyses were stratified for boys and girls. Statistical differences between the groups were evaluated by means of χ^2-tests, with a significance level of 0.05. We employed univariate and multivariate logistic regression to assess factors related to sexual onset, condom use and use of oral or injectable contraceptives. The odds ratio (OR) and 95% confidence interval (CI) were used as measures of association.

Ethics

This study complies with the Helsinki Declaration on Ethical Principles for Medical Research Involving Human Subjects. It was approved by the Bioethics Committee of Ghent University, Belgium and the committee of ethics and research of the Universidad Nacional Autonoma de Nicaragua.

RESULTS

Sample characteristics

According to the information received from the persons at the door the total number of eligible adolescents in the selected town areas amounted to 3071. Overall, 257 eligible youths did not participate in the survey; of those, 79 (3%) refused participation and 178 (6%) were absent during both the first- and the second visit. From the 2814 collected questionnaires 11 were incompletely filled out and therefore excluded from analysis. The main characteristics of the 2803 enrolled respondents split by sex are given in Table 2. The sample consisted of 1445 (52%) girls and 1358 (48%) boys. The respondents' age varied from 13 to 18 years, with an under-representation of the 18-year-olds (13%) in comparison to the other ages (from 16–19%).

Differences between girls and boys were found with respect to whether or not the adolescent was living with the parents ($p = 0.047$). More boys than girls stated they were insufficiently informed on sexuality-related issues ($p < 0.001$). Girls more frequently reported having visited a healthcare provider (HCP) to obtain information on sexuality issues. On the other hand, more girls (162 out of 504) than boys (117 out of 567) said it was not possible to discuss sexuality with their partner ($p < 0.001$). Among the girls 9% (128 out of 1445) were or had ever been pregnant (Figure 1).

Table 1 Definition of the variables.

Variable	*Question*	*Categorisation of answers*
Intrapersonal, interpersonal and environmental variables		
Main floor material	What is the main flooring material in your house?	Natural floor Other
Religious affiliation	To which religion do you belong?	Catholic Other No religion
Alcohol consumption	How frequently do you drink alcohol?	Never Less than once a week Weekly or more
Living with parents	How many years did you live with your father/mother over the last three years?	Yes (=3 years) No (<3 years)
Ease to talk about sexuality with friends/partner	Do you find it easy to talk about sexuality with friends/partner?	Yes No
Initiative for the last sex was taken by	Who took the initiative at the last sexual intercourse?	Respondent Partner Both
Sex without love	Did you ever have sexual intercourse without feeling love?	Yes No
Sexual health variables		
Sufficiently informed on sexuality	Do you consider yourself being sufficiently informed on the topic sexuality?	Yes No
Visited healthcare provider	Did you visit a healthcare provider to obtain information on sexuality issues over the last year?	Yes No
Sexually active	Have you ever been sexually active (penetration)?	Yes No
Use of oral or injectable contraceptives	Are you or your partner currently using one of the following contraceptive methods? a) Consistent use of condoms during the last three sex acts; b) contraceptive pill; c) contraceptive injection; d) an implant; e) intrauterine device	Yes (b and c) No (other)
Current contraceptive use	Are you or your partner currently using one of the following contraceptive methods? a) Consistent use of condoms during the last three sex acts; b) contraceptive pill; c) contraceptive injection; d) an implant; e) intrauterine device	Yes No
Pregnancy	Are you currently pregnant or have you ever been pregnant?	Yes No

Determinants of sexual onset

There were 475 (35%) boys and 299 (21%) girls who reported being sexually active (OR = 2.06; $p < 0.001$). This sex difference was found in all ages with the exception of the 18-year-olds for whom no difference at the 0.05 level was found. As was expected, age itself was a determinant of sexual activity: among 13-years-olds, 2% of the girls and 8% of the boys reported being sexually active compared to 57% and 66% among 18-year-olds (Figure 2).

Higher levels of sexual activity were also observed among adolescents not living with their parents (Table 3). In addition, among girls, the absence of the

Table 2 Overview of the characteristics of the sample ($N = 2803$).

Socio-demographic characteristics	*Girls* *n = 1445*	*Boys* *n = 1358*
Age		
Median	15	15
Inter-quartile range	[14;17]	[14;17]
Mean	15.29	15.38
Living		
With both parents	737 (51%)	691 (51%)
With father only	54 (4%)	68 (5%)
With mother only	489 (34%)	480 (35%)
With no parents	165 (11%)	119 (9%)
Main floor material		
Natural floor	288 (20%)	269 (20%)
Cement	631 (44%)	635 (47%)
Tiles or wood	525 (36%)	454 (33%)
Religion		
No religion	346 (24%)	407 (30%)
Catholic	443 (31%)	347 (26%)
Evangelical	625 (43%)	567 (42%)
Jehovah's Witnesses	22 (2%)	19 (1%)
Other	9 (1%)	18 (1%)
Alcohol consumption		
Never	1167 (84%)	969 (74%)
Less than once a week	218 (16%)	323 (25%)
Weekly or more	10 (0%)	17 (1%)
Insufficiently informed on sexuality	235 (16%)	333 (25%)
Having a partner	510 (35%)	572 (42%)
Visited healthcare provider	317 (22%)	227 (17%)
Sexually active	299 (21%)	475 (35%)
Sex without love among sexually active	[$n = 299$]	[$n = 475$]
	63 (21%)	305 (65%)
Without partner among sexually active	[$n = 299$]	[$n = 475$]
	67 (22%)	232 (49%)
Pregnancy	128 (9%)	–

father alone (= living alone with mother) showed a higher odds for being sexually active; this was less the case for boys. Among both girls and boys, alcohol use was linked to a higher probability of being sexually active.

Use of contraception

Of the adolescents who were sexually active, 162 (54%) girls and 206 (43%) boys reported that they were using a modern contraceptive at the time of the survey; this difference between girls and boys was statistically significant ($p = 0.004$). Table 4 shows the contraceptive use among sexually active respondents with a regular partner (69%) and those not having a regular partner (31%). The latter were less likely to report the current use of a contraceptive.

Hormonal injections were the most common (25%) form of contraception reported by girls, followed by oral contraceptives (OCs, 13%), intrauterine devices (IUDs, 4%) and implants (0.3%).

The logistic multivariate regression analysis of consistent condoms use (Table 5) showed that boys who were Catholic, lived with their mother only, lived in a house with a manufactured floor and had never felt peer pressure to have sex were more likely to report consistent condom use during the last three sex acts. Girls who considered they had sufficient information

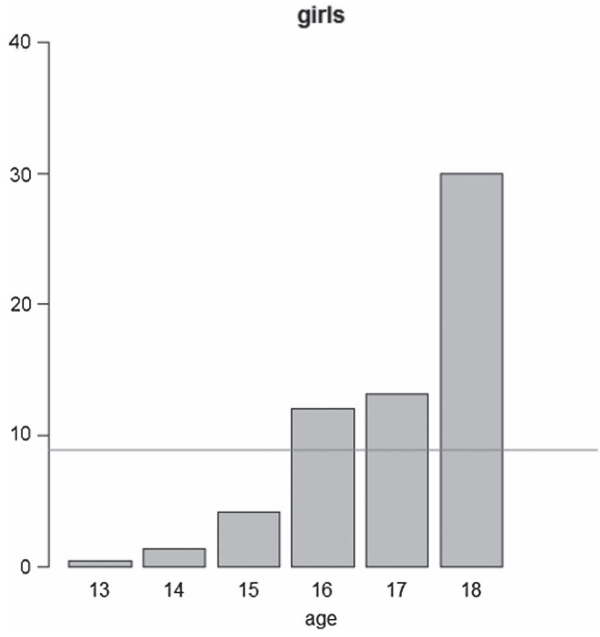

Figure 1 Percentages of girls who were pregnant or had ever been pregnant (the line represents the mean value).

on sexuality and who talked about it with their friends reported a more consistent condom use. Girls older than 16 years and girls whose partner took the initiative for the last sex act were less likely to state they had consistently employed a condom.

Univariate and multivariate regression analyses were done to assess factors related to the use of oral or injectable contraceptives (Table 6). Having a partner was associated with hormonal contraceptive use among boys and girls. Boys who found it easy to talk about sexuality with their partner and employed condoms consistently mentioned more frequently that their partners used oral or injectable contraceptives.

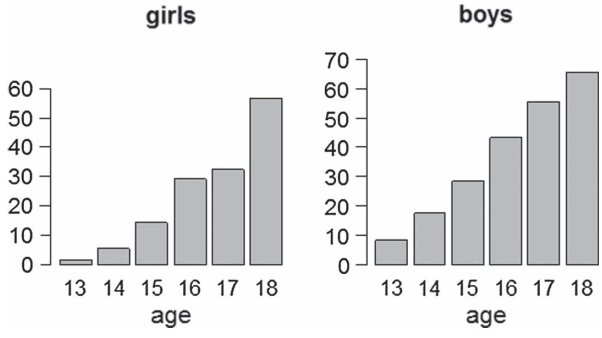

Figure 2 Percentages of sexually active adolescent girls and boys per age group.

DISCUSSION

Main sexual health outcomes

This study assessed sexual health outcomes among adolescents aged 13 to 18 living in poor neighbourhoods in Managua. One quarter of the boys and 16% of the girls stated they were insufficiently informed on issues related to sexuality. Less than 20% of the respondents visited a HCP to obtain information on sexuality in the last 12 months. 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 mentioned that they used a modern contraceptive shortly before the survey. Condoms, OCs and injectables were the methods most frequently relied upon. Few adolescents in our study sample chose long-acting reversible contraceptives (LARCs) such as IUDs or hormonal implants. A current or previous pregnancy was reported by 9% of girls aged 13–18 and by 30% of girls aged 18.

Intrapersonal factors

The sex of respondents and alcohol use were related to sexual behaviours. Boys under 18 were more frequently sexually active than their female peers. A sex difference was also seen in the reported use of contraception. More girls than boys were relying on a modern contraceptive at the time of the survey. Adolescents who consumed alcohol were more likely to have started sexual activity.

Interpersonal factors

ASRH is also determined by the interaction of adolescents with significant others. A recent review provides evidence to support a protective association between adolescents' sexual behaviour and the emotional attachment and communication with family members, friends and partners[17].

Parental liaison

Half of our respondents were not living with both their parents, whose absence was related to sexual onset. The finding that the physical presence of the father is particularly important for girls' sexual behaviour corroborates the results of prior studies associating fathers' absence to early sexual activity and teenage pregnancy[18].

Table 3 Odds Ratios for being sexually active (bivariate analysis).

	Girls	*Boys*
Age group (ref = 15 or younger)		
≥ 16	8.3 ($p < 0.001^{***}$)	5.35 ($p < 0.001^{***}$)
Living or not with parents (ref = Living with both parents)		
Only with father	1.04 ($p = 1$)	1.32 ($p = 0.342$)
Only with mother	1.36 ($p = 0.049^{*}$)	1.2 ($p = 0.149$)
With no parents	3.6 ($p < 0.001^{***}$)	1.83 ($p = 0.003^{**}$)
Alcohol consumption (ref = Never)		
Less than once a week	3.87 ($p < 0.001^{***}$)	6.67 ($p < 0.001^{***}$)
Weekly or more	2.17 ($p = 0.387$)	14.2 ($p < 0.001^{***}$)
Having a partner (ref = Not having a partner)	10.77 ($p < 0.001^{***}$)	4.13 ($p < 0.001^{***}$)

The asterisks indicate a difference between boys and girls with $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$

It is assumed that the impact of the father's absence on the daughter's sexual behaviour is mainly caused by concomitant factors such as divorce, family conflict and income loss. However, a longitudinal study in the United States and New Zealand provides arguments for the hypothesis that, in relation to girls' sexual development, the presence of the father is important in its own right and not just as a proxy for the correlates[18].

Emigration is one of the most common reasons for parental household absence in Central America[19]. In Nicaragua, emigration has been increasing during the last years with a net migration rate of − 3.3 per 1000 in 2013[20] and might be a contributing factor to the current epidemic of teenage pregnancies.

Kind of relationship with sexual partner

The contraceptive prevalence rate was significantly lower among respondents without a regular partner at the time of the survey. Because it is irregular and less predictable, teenagers who indulge in casual sex might not perceive the need for consistent contraception[21].

Communication

Communication influences 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 about sexuality with their partner report more frequently that the latter uses a hormonal contraceptive than those who state it is difficult to discuss such matters with her. Other studies are concordant with our findings related to communication and contraceptive use[17,22].

Peer pressure

In agreement with other investigators[17] our study demonstrates the effect of peer pressure on sexual risk

Table 4 Contraceptive use among sexually active adolescents.

	Adolescents who have a regular partner		*Adolescents who do not have a regular partner*	
	Girls (N = 232)	*Boys (N = 305)*	*Girls (N = 67)*	*Boys (N = 170)*
Current contraceptive use	138 (59%)	155 (51%)	24 (36%)	51 (30%)
Consistent use of condoms	51 (22%)	84 (27%)	19 (28%)	38 (22%)
Respondent or partner currently uses				
Oral contraceptives	35 (15%)	68 (22%)	4 (6%)	–
Intrauterine devices (copper T)	9 (4%)	5 (2%)	2 (3%)	–
Hormonal implants	1 (0.4%)	2 (0.7%)	0 (0%)	–
Hormonal injections	71 (31%)	37 (12%)	3 (4%)	–

Table 5 Factors associated with consistent condom use during the last three sex acts, univariate and multivariate analyses.

	Univariate analyses				*Multivariate analyses*			
	Girls (N = 299)		*Boys (N = 475)*		*Girls (N = 299)*		*Boys (N = 475)*	
	OR	*p*	*OR*	*p*	*aOR*	*p*	*aOR*	*p*
Demographic and socio-economic determinants								
Age group (ref = 15 or younger)								
≥ 16	0.67	0.235	1.27	0.328	0.39	0.015*		
Living or not with parents (ref = Living with both parents)								
With no parents	0.97	0.922	0.69	0.328			0.88	0.760
Only with father	0.90	0.895	0.93	0.79			1.10	0.851
Only with mother	0.91	0.777	1.33	0.212			1.89	0.011*
Main floor material (ref = Natural floor)								
Other type of floor	1.22	0.558	2.22	0.013*			1.95	0.048*
Religion (ref = No religion)								
Catholic	0.91	0.788	1.97	0.009**			1.77	0.042*
Evangelical and other	0.81	0.530	0.98	0.943			0.94	0.838
Determinants of knowledge								
Respondent considered to have sufficient information on the topic sexuality (ref = No)	2.67	0.032*	1.08	0.778	2.48	0.061		
Communication about sexuality								
Respondent finds it easy to talk about sex/sexuality with…								
… friends (ref = No)	1.97	0.024*	0.83	0.411	2.16	0.023*		
Reasons for having sexual intercourse								
Initiative for the last sex act was taken by…(ref = Both)								
Respondent	0.32	0.141	0.66	0.222	0.31	0.144		
Partner	0.09	0.021*	0.51	0.094	0.09	0.025*		
Respondent never felt peer pressure to have sexual intercourse (ref = No)	0.72	0.623	0.35	0.023*			0.35	0.034*

OR, odds ratio; aOR, adjusted odds ratio.

The *p*-value refers to the significance of difference with the reference category. The asterisks indicate the level of significance with $^{*}p < 0.05$; $^{**}p < 0.01$.

Table 6 Factors associated with use of oral or injectable contraceptives, univariate and multivariate analyses.

	Univariate analyses				*Multivariate analyses*			
	Girls (N = 299)		*Boys (N = 475)*		*Girls (N = 299)*		*Boys (N = 475)*	
	OR	*p*	*OR*	*p*	*aOR*	*p*	*aOR*	*p*
Demographic and socio-economic determinants								
Living or not with parents (ref = Living with both parents)								
With no parents	1.68	0.097	0.63	0.205				
Only with father	1.60	0.501	1.11	0.810				
Only with mother	1.09	0.759	0.53	0.010**	0.95	0.886	0.61	0.091
Having a partner (ref = Not having a partner)	6.96	<0.001***	8.04	<0.001***	5.99	<0.001***		
Communication about sexuality								
Respondent finds it easy to talk about sexuality topic of sexuality with…								
… partner (ref = No)	1.62	0.247	2.27	0.019*			2.15	0.030*
… friends (ref = No)	0.55	0.015*	0.74	0.194	0.61	0.071		
Contraceptive practice								
Respondent consistently used condoms during last three sex acts (ref = No)	0.92	0.780	1.90	0.006**			1.80	0.019*
Reasons for having sexual intercourse								
Initiative for the last sex act was taken by… (ref = Both)								
Respondent	0.63	0.381	0.66	0.250	0.65	0.443		
Partner	0.77	0.532	1.00	0.995	0.79	0.593		
Respondent ever felt peer pressure to have sexual intercourse (ref = No)	0.37	0.103	1.11	0.812	0.28	0.064		

OR, odds ratio; aOR, adjusted odds ratio.

The *p*-value refers to the significance of the difference with the reference category. The asterisks indicate the level of significance with $^{*}p<0.05$; $^{**}p<0.01$; $^{***}p<0.001$.

taking. Boys and girls who report ever having felt peer pressure to have sexual intercourse are less likely to use condoms and hormonal contraceptives, respectively.

Environmental factors

The context of lasting poverty, changing lifestyles, religiosity, sexual double standards and healthcare reform affect the SRH of adolescents in Nicaragua.

Poverty

Nicaragua is the second poorest country in the Western Hemisphere, with 43% (2009) of the population living below the poverty line[20]. The floor material is a proxy for household poverty in Nicaragua[14]. Twenty percent of our respondents lived in a house with an earthen floor. Boys living in such a house were less likely to report consistent condom use than their peers living in a house with a manufactured floor. Several studies acknowledge that economic hardship is associated with an early sexarche and unsafe sexual behaviour[1,5,17]. Poor access to health services, transactional sex and low education are the most frequently mentioned factors related to low socio-economic status with a negative impact on ASRH[17].

Transition to more liberal sexual behaviours

According to Caldwell et al. the penetration of Western mass media and the loss of social control favour sexual experimentation among adolescents[23]. In our study sample approximately one third of the respondents were sexually active. Previous research

showed that in Nicaragua, as elsewhere in Latin America, sexual activity is becoming more frequent among teens and starts at an ever earlier age[7,9,11,17]. The liberal sexual behaviour among Nicaraguan boys can also be inferred from the fact that 65% of the male respondents reported having sexual intercourse without being in love.

Religion

A religious affiliation was reported by 73% of the respondents. In contrast to the prevailing views on religion and contraceptive use, we found that Catholic respondents used condoms more frequently than non-religious adolescents and youths from other faith groups. Nicaraguan researchers argue that local Catholic priests and laypersons, faced with the reality of teenage pregnancies in their parishes and despite the conservative position of the Nicaraguan Catholic Church, promote safe sexual behaviour and condom use among adolescents. As they do not attend church activities, non-religious youths are not receiving this additional, church-based sexuality education. Furthermore, Catholic adolescents attach less importance to religion and religious regulations than their peers belonging to another faith[24].

Gender and social norms

In Nicaragua, tradition, religious and cultural beliefs are crucial determinants of normative ideas about good and bad[25]. Machismo and marianismo (the veneration for feminine virtues like purity and moral strength) are still hegemonic patterns within families[26]. As a consequence, adolescents often receive contradictory messages regarding sexual behaviour. Boys are encouraged to be sexually active while premarital sex is disapproved for girls [25,26].

Those gender issues might partially explain the difference in reported sexual intercourse between male and female respondents. It is likely that, due to social desirability, female respondents denied sexual intercourse in the face-to-face interviews. Similarly, the reported use of contraception differs according to the sex of the respondents. Possibly boys were 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 the discrepancy regarding reported use of injectables (girls: 31% vs. boys: 12% of their partners). Both findings suggest that there is a gender difference in taking responsibility regarding protection against pregnancy. Also other studies point out that boys rely on girls' sense of responsibility concerning contraception[27,28].

The cultural standards and social pressure may also account for respondents' low use of health services regarding their sexual health. The taboo on sexuality and the expectation that health providers will react negatively restrain girls from seeking help for their contraceptive needs[28,29].

Health system in transition

Despite some improvements in health indicators, the Nicaraguan healthcare system still faces challenges regarding the allocation and utilisation of resources, inequities in access, poor working conditions of HCPs and the limited capacity of the Ministry of Health to perform its stewardship role to ensure the quality and efficiency of the health services[30].

Some of the study findings can be interpreted in the light of the aforementioned context. The poor access rate of adolescents to SRH services in our study is not unexpected given the overall accessibility problems of the healthcare system[31]. Furthermore, HCPs are reluctant to provide modern contraceptives to adolescents[32] notwithstanding the national guidelines on family planning including up-to-date recommendations regarding ASRH[33]. In many cases HCPs are not familiar with the content of those standards or do not feel themselves sufficiently backed up to address adolescents' SRH issues in daily practice[29–31]. Furthermore, it is likely that the poor working conditions and the job insecurity of HCPs[34] have an impact on their willingness to provide SRH services to teenagers. A doctor working under the threat of losing her or his job will be little inclined to take initiatives such as seeing unaccompanied teens or prescribing contraceptives to them for which she/he might be criticised by colleagues, parents or superiors.

In 2007 the Ministry of Health, endorsed by the World Health Organisation (WHO), introduced a new model of care known as the Family and Community Health Model[35]. This model focuses on a decentralised, community-based and comprehensive approach of primary healthcare. HCPs are expected to offer a broad range of care to the whole population instead of focusing on a particular population group or health

topic. This transition affecting the health system restrains the provision of specific services like ASRH counselling[36].

Study limitations

The specific design of this study must be taken into account when interpreting the results. We assessed adolescents living in randomly selected town areas in Managua that met specific criteria regarding poverty and number of inhabitants. Our findings may not be representative for all Nicaraguan youths. But, given the large sample size, it provides an insight in the sexual behaviour of teenagers living in poor urban areas. It is likely that the determinants of that behaviour which we identified are similar to those applying to other adolescent populations in Nicaragua, as those determinants also have been described by other investigators.

Our results could be biased by the fact that 3% of the eligible adolescents refused to participate and that 6% of them could not be located. We have no information on the characteristics of the non-respondents. However, it is likely that a majority of those absent were older adolescents given the under-representation of the 18-year-olds in the sample and the fact that older teenagers are more often absent from home than younger ones. Adjustment of the results for age might have reduced the bias effect of non-respondents.

Sexual behaviours were measured through self-report which might, given the sensitivity of the topic, have led to report bias. We tried to minimise the bias effect by changing during each face-to-face interview to a self-administered procedure for the questions directly related to sexual behaviour.

In the interpretation of the results we link the variable 'main floor material' to the socio-economic situation (SES) of the respondent. The use of this single variable as indicator for the SES can be criticised. However, the floor material, being the most discriminating factor for the quality of the house, is considered a rough proxy for SES in Nicaragua.

Recommendations for interventions and future research

The great number of sexually active youths and the low contraceptive prevalence in Nicaragua underline the need to make contraception accessible to every teenager. Based on this study, recommendations can be formulated for actions to achieve this.

First, contraceptive counselling should be provided to teenagers consulting a primary healthcare setting. However, the current implementation of a new healthcare model in Nicaragua entails some additional challenges for the provision of adolescent-specific services. Training and structural measures are required to assure the integration of ASRH counselling within the global package of care.

Second, the promotion of LARCs might be an effective strategy that circumvents the barrier of repeated contacts with HCPs. Experts maintain that LARCs are appropriate for adolescents[37]. They should be offered, in particular, to sexually active teenagers without a current partner as the use of oral or injectable contraceptives among those respondents was extremely low.

Third, our data show the importance of including gender aspects in ASRH promoting interventions. One should investigate the role of fathers in the sexual development of girls and how this role could be positively influenced. Also boys' attitudes towards contraceptive risk-taking should be explored with a view to target the promotion of contraceptive use to both girls *and* boys.

Fourth, our study identified several interpersonal and contextual factors related to adolescents' sexual behaviour. ASRH promoting strategies should consider both the dynamics between adolescents and important others, and the modifying effect of the context[4,38].

CONCLUSION

The adolescent fertility rate in Nicaragua is the highest in Latin America and is among the highest in the world. This study has shed a light on critical factors related to youths' sexual behaviour, which will be useful for the development of effective strategies in Nicaragua.

Adolescents from poor neighbourhoods in Managua initiate sexual activity at early ages and only a few of them consistently use contraceptives. Youths' sexual behaviour is related to personal aspects (sex, alcohol use), to the interaction with important others and to the environment (housing condition, religion). We interpreted the found associates within the Nicaraguan

context including the current societal changes and the recently implemented health system reform.

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