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Early Sexual Debut: A Risk Factor for STIs/HIV Acquisition Among a Nationally Representative Sample of Adults in Nepal

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Abstract

While early sexual debut is highly prevalent in Nepal, its link to sexually transmitted infections (STIs/ HIV) risk factors has not been explored at a national level. The objective of this study was to assess potential association between early sexual debut and risk factors for STIs/ HIV acquisition, including sexual risk behaviors, sexual violence, and teenage pregnancy among adults in Nepal. Data were taken from the nationally representative Nepal Demographic Health Survey (2011), which employed a two-stage complex design to collect data. A sample of 12,756 adults (ages 15–49 years) were included. Multivariate logistic models were conducted, adjusted for demographic characteristics, to assess the association between early sexual debut and STIs/HIV-related risk factors. The prevalence of early sexual debut in this sample was 39.2 %, with a mean age of coital debut at 17.9 years. After adjusting for potential confounders, individuals with early sexual debut were significantly more likely to report a history of STIs (aOR 1.19; 95 % CI 1.06–1.35) and had a significantly higher risk profile, including having multiple sex partner (aOR 2.14; 95 % CI 1.86–2.47), inconsistent condom use (aOR 0.72; 95 % CI 0.61–0.86), paid for sex (aOR 1.61; 95 % CI 1.14–2.27), a history of sexual violence (aOR 1.99; 95 % CI 1.63–2.43), and teenage pregnancy (aOR 12.87; 95 % CI 11.62–14.26). Individuals who have early sexual debut are more likely to engage in risk behaviors that place them at increased risk of STIs/ HIV acquisition. STIs/HIV prevention strategies should aim at delaying sexual debut to decrease the disproportionate burden of adverse health outcomes, including STIs/ HIV, among individuals in Nepal.

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Conflict of interest The authors declare that they have no conflict of interest.

Compliance with Ethical Standards

Human Participants The study protocol was approved by the Nepal Health Research Council, Nepal, and the Institutional Review Board of IFC Macro in Maryland, USA.

Informed Consent The interviewees provided written informed consent before participating in the study.

Keywords

Early sexual debut; Sexual risk behavior; Sexually transmitted infection; HIV/AIDS; Nepal

Introduction

Early sexual debut has been of particular interest to researchers and health professionals globally. Commonly defined as having had first sexual intercourse at or before age of 16, it has been shown to be a strong marker for future poor sexual health and risk behaviors patterns [1, 2]. A growing body of literature has reported that sexual initiation at younger age has been associated with unintended adolescent pregnancy [3–5], risk of acquiring sexually transmitted infections (STIs) including HIV/AIDS [3, 6, 7], and subsequent risk behaviors later in life, including having multiple sexual partners [2, 3, 8], higher sexual risk-taking behaviors [3, 4, 9], and more-negative attitudes towards condom use [10]. The continued declines in the median age at first sex, in a number of countries worldwide, has raised a serious concern regarding associated negative health outcomes and an overall effectiveness of ongoing STIs/ HIV prevention efforts [1, 2].

Early sexual debut exists in Nepal, despite the cultural tendency toward placing a high value on virginity before marriage [11]. With increasing urbanization, globalization, and other social changes – such as perceived Western attitudes, values, and behavior – there are distinct changes in the sexual values of young people, with a trend toward first intercourse at earlier ages [12]. For example, a country-based Nepal Demographic Health Survey (NDHS) indicated that 40 % of young women and 24 % of young men had their first sex by age 18 [13]. Similarly, a recent study reported that 59 % of men had initiated sex before the age of 18 [14]. Further, a study among returnee migrant workers in Nepal revealed that 40 % of the participants had their sexual debut between 15 and 19 years of age, while 10 % reported their sexual debut to be <15 years [15]. This shows that more individuals are exposed to risks of unwanted pregnancy and increased risk of being infected with STIs/HIV that have harmful health, social, and economic consequences.

While a growing body of evidence indicates a high prevalence of early sexual debut in Nepal, no national-level study has reported a link to STIs/HIV-related risk factors. Considering the dearth of information in this research area, this study aimed to fill gaps in the literature by using population-based data while maximizing inferences to the general population. This study's objectives were to (1) describe the prevalence of early sexual debut in Nepal, (2) examine the risk factors for early sexual debut and (3) assess the potential association between early sexual debut and risk factors for STIs/HIV acquisition, including sexual risk factors, sexual violence, and teenage pregnancy.

Methods

Design, Setting, and Sample

Data were included from the nationally representative cross-sectional survey, Nepal Demographic and Health Survey 2011 (NDHS-2011) [13]. The survey used a two-stage

stratified cluster-sampling technique. In the first stage of the sampling, the enumeration areas (EAs) were selected. A total of 95 urban and 194 rural EAs were included in the survey. In the second stage, households were selected based on the EAs. This procedure resulted in identifying 12,918 eligible women, of which 12,674 completed the survey, and 4323 eligible men, of which 4121 completed the survey. Trained research assistants obtained informed consent prior to data collection. The survey was approved by the Nepal Health Research Council, Nepal, and the Institutional Review Board of IFC Macro in Maryland, USA.

The NDHS-2011 survey included three questionnaires: the Household Questionnaire, the Woman's Questionnaire, and the Man's Questionnaire. Separate datasets, for example, the children data, the individual data, and the male data were created by merging the information from these three questionnaires. For the purpose of this study, individual and male datasets were merged, resulting in a total of 16,795 individuals (women: 12,674; men: 4121). The analytic sample was then restricted to individuals who reported "*ever had sexual intercourse*" because the study focused on the influence of sexual debut on subsequent STIs/HIV related risk factors. This comprised a total of 12,756 women and men who had experienced sexual intercourse, after excluding 251 cases with inconsistent data (Fig. 1).

Measures

Basic socio-demographic variables including age, sex, religion, place of residence, ecological region, marital status, age at first marriage, educational status, and employment status of the participants were assessed via single self-reported items on the survey. A wealth index of household was calculated based on interviewer-observed household assets (taking into account of urban–rural differences); the resulting score was then divided into quintiles. Participants' status regarding smoking habit and first birth were assessed by the question "Do you currently smoke cigarettes?" and "How old were you when your first child was born?" respectively. The dichotomous variable of interest, "early sexual debut," was constructed based on responses to the question, "How old were you when you had sexual intercourse for the very first time?" Those who first had sex at age 16 or before were classified as having "early sexual debut," and those who had first sex after age 16, as having "later sex" [1, 2].

Outcome variables were grouped into 3 areas of interest: sexual risk behaviors, sexual violence, and teenage pregnancy. Questions including "Have you heard about infections that can be transmitted through sexual contact, including HIV/AIDS?", "During the last 12 months, have you had a disease which you got through sexual contact or had a bad-smelling abnormal genital discharge or had a genital sore/ulcer?", "What is the total number of sexual partner you had in your lifetime?", "Was a condom used every time you had sex in the last 12 months?", "The last time you had sexual intercourse, was a condom used?", "Have you ever paid anyone in exchange for having sexual intercourse?", "Can you say no to your partner if you do not want to have sex?", and "Could you ask your partner to use a condom if you wanted him to?" were asked to assess participants' sexual risk behaviors. Sexual violence was measured by a positive answer to any of the following 2 items, "physically force you to have sexual intercourse with him even when you did not want to" or "force you

to perform any sexual acts that you did not want to” at the hands of your partner. A dichotomous variable was constructed for “teenage pregnancy” based on “age at first birth”. Those who had their first child at age 15–19 were categorized as having “teenage pregnancy,” and those who had their first child after age 19, as not having teenage pregnancy.

Analysis

The prevalence of early sexual debut was calculated based on respondents’ age at first sexual intercourse. Univariate analysis was carried out to understand the frequency distribution. A multivariate logistic regression model was first constructed to estimate the odds ratio (OR) and 95 % confidence interval (CI) for the association of respondents’ characteristics and early sexual debut. Subsequently, we constructed multivariate regression models to assess the associations between early sexual debut and STIs/HIV-related risk factors. The models were then adjusted for major demographic variables, including: age, sex, type of resident, marital status, age at first marriage, educational status, employment status, wealth index, and smoking habit. Estimates were evaluated for statistical significance based on 95 % CIs with $p < .05$. All analyses were conducted using SPSS software, version 20.0. All of our analyses were weighted using the sample weight to account for the complex sampling design of the NDHS survey.

Results

Participant Characteristics

The total sample included 12,756 individuals aged 15–49 years (76 % females) who indicated that they had ever had a sexual intercourse. The mean current age was 31.8 years, with the majority identified as Hindu (84.6 %). Over fourth-fifth of the participants were from rural areas (86.1 %), and over half from the Hill region (53.3 %). The majority (93.9 %) of the respondents were married, with the mean age of first marriage at 18.1 years. Over half of the respondents (59.3 %) had received some level of formal education. In terms of household economic status, 67.8 % all of the respondents studied were currently engaged in some type of income-generating activity and were fairly evenly distributed across the wealth quintiles. Over three-fourth of the respondents indicated that they do not currently smoke cigarettes (83.1 %) and the mean age at first birth was reported to be 20.4 years. Age of first sexual intercourse ranged from 8 years through 44 years, with a mean of 17.7 years. Over one-third of respondents (39.2 %) reported having sexual intercourse by age 16 years (Table 1).

STIs/HIV-Related Risk Factors

Table 2 shows that 89.3 % of the respondents reported hearing about STIs, including HIV/AIDS. The prevalence of self-reported STIs among this sample was 10.5 %. A small proportion of respondents (12.4 %) reported having multiple sex partners, with a mean of 1.4 sexual partners and the majority of them reported having 1–2 sexual partners. About 2/3 of the respondents reported using a condom during every instance of penetrative sex with their primary partners in the past 12 months (67.4 %), whereas only 1 in every 14 individuals reported using a condom during their last sexual intercourse. Over 90 % of the

respondents reported feeling able to refuse sex if he/she did not want to (93 %); however, less than 1/3 felt that they could negotiate condom use with their partner (27.4 %). Approximately, 1 in every 6 respondents (15.1 %) reported having ever experienced sexual violence from their intimate partner in their lifetime. Almost half of the respondents (46.1 %) reported a history of teenage pregnancy.

Relationship Between Participant Characteristics and Early Sexual Debut

Compared to females, males were 2.56 times less likely to have sexual initiation before the age of 17. Currently married individuals were 1.81 times less likely to have early sexual debut than those who were not currently married. Compared to respondents with no formal education, those with primary, secondary and higher level of education were 1.31, 2.38, and 14.29 times, respectively, less likely to report early coital debut. Similarly, individuals who were currently employed were 1.31 times less likely to report early age at first sexual as compared to their counterparts who were not currently employed. Compared to individuals in the lowest level of economic status (i.e., poorest wealth index), those belonging to the average economic status (i.e., middle wealth index) were 1.19 times more likely to experience early sexual debut; however, individuals belonging to the richest wealth index were 1.41 times less likely to have initiated early sexual debut. Individuals who reported currently smoking cigarettes were 1.22 times more likely to report having early sexual debut as compared to those who do not smoke (Table 3).

Relationship Between Early Sexual Debut and STIs/ HIV-Related Risk Factors

Respondents who experienced early sexual debut were 1.45 times less likely to have heard about STIs including HIV/ AIDS, 1.19 times more likely to have a history of STIs, and 2.14 times more likely to report having multiple sex partner compared to their counterparts who reported sexual debut at later age. Among participants who reported being engaged in sexual intercourse with their partners in the past 12 months, respondents who reported early sexual debut were 1.64 times less likely to report using a condom every time they had sexual intercourse and 1.39 times less likely to report having used a condom during their last sexual intercourse as compared to individuals who reported late coital debut. Respondents who reported early sexual debut were 1.61 times more likely to report having ever paid someone for sex, 1.29 times more likely to refuse sex, and 1.59 times more likely to report negotiating condom use with their partner compared to those who reported late sexual debut. Likewise, compared to respondents who reported late sexual debut, those with early sexual debut were 12.87 times more likely to report a pregnancy before the age of 19 (Table 4).

Discussion

The present study found a high prevalence of early sexual debut among our nationally representative sample from Nepal, with two in every five of sexually experienced individuals reporting early sexual debut and mean age of first sex to be 17.9 years. The gender difference was noticeable with males less likely to initiate early sexual debut as compared to females. This is similar to the findings obtained in the NDHS-2011, which revealed that 25 % of men and 54 % of women age 25–49 had first sexual intercourse by age 18 [13]. Studies conducted elsewhere, however, have reported conflicting results, where

males were more likely to initiate sex at a relatively younger age [9, 16, 17]. This regional variation may be due to distinct structural settings, public policies, and social norms that help guide behavior and its consequences on sexual health.

Our analysis revealed a negative association between educational attainment and early sexual debut, which is consistent with the previous findings [18, 19]. The driving force behind this may have been that individuals who have higher educational goals and better access to resources also tend to be more motivated to delay sexual activity. Interestingly, in our sample of respondents, belonging to the middle wealth index was associated with a higher likelihood of having experienced early sexual debut, whereas belonging to the richest wealth index was associated with lower likelihood of having experienced early sexual debut as compared to those belonging to the poorest wealth index. This apparent non-linear effect may be due to a function of differential cultural values and norms, and this association may not be the same across cultures or contexts.

Corroborating previous findings [17, 20], currently smoking cigarettes was found to be strongly associated with having experienced early sexual debut: respondents who reported currently smoking were more likely to report early sexual debut as compared to those who reported not currently smoking. It may be that these individuals include a greater number of smokers in their immediate social network, thus increasing the likelihood of developing a smoking habit themselves. While it is difficult to establish the temporality of the observed associations, this relationship is critical and requires proper attention while designing and targeting STIs/HIV intervention programs.

Our data showed a clear trend indicating that early onset of sexual activity was associated with a constellation of risk factors that place individuals at an increased risk for STIs/HIV infection. Respondents who experienced early sexual debut were significantly less likely to have heard of STIs, including HIV/AIDS. Furthermore, we found young age at first sexual intercourse to be associated with a history of STI. This supports findings from previous studies that individuals, particularly females, who had early sexual debut have a higher incidence of STIs than those who had late sexual debut [3, 6, 7]. It could be that the relationship between early coital debut and STI infections may have been influenced through other factors, such as having multiple sex partner, having sex without a condom, and sexually coercive behaviors of the partner.

Having multiple sexual partners and lack of condom use are associated with heterosexual transmission of STIs/HIV. The current study also revealed that being younger at sexual debut was associated with over a two-fold increased likelihood of having multiple sex partners, as is consistent with previous research [3, 8]. One plausible explanation is that initiating sex at an earlier age lengthens sexual career and, hence, provides more time to accumulate sexual partners. Consistent with previous findings [3, 4, 9], individuals with early sexual debut were less likely to have used a condom during sexual activity. These individual may not have had adequate knowledge about risks and benefits of condom use or may have been embarrassed to obtain condoms then. Thus, they engaged in these sexual risk behaviors, and once the behavior is established, they continue in this manner.

Surprisingly, our results revealed that individuals with early sexual debut were able to refuse sex and to be able to negotiate condom use during sexual activity with their partner. This is inconsistent with the findings from previous studies, which have found that early sexual debut may be linked with low power to negotiate safe sex, particularly due to the power imbalances between the partners [21]. Furthermore, consistent with prior studies, respondents who reported early sexual debut were at two-fold increased likelihood of experiencing sexual violence and 12-fold increased likelihood of having teenage pregnancy. Similar findings have been reported in other countries, namely that early initiation of sexual activity was associated with coercive sex [5, 22] and elevated risk of teenage pregnancy [3–5]. Furthermore, respondents with early sexual debut were more likely to have paid someone for sexual activity. This is particularly worrisome because individuals who pay for sex are considered to be a bridging population for STIs/HIV, as their paid partners are often individuals at higher STIs/HIV risk [23, 24].

Our findings suggest that there is a clear need to develop effective STIs/HIV prevention initiatives with a special focus on creating awareness about the need of delaying sexual debut. As such, a comprehensive and segmented approach is needed to reach youth in an effort to prevent HIV infection and promote health. Encouraging abstinence can be an important approach that can help delay sexual activity. In order for adolescents to achieve the confidence and ability to refrain from early sexual activity, it is necessary to provide them with culturally and linguistically competent reproductive and sexual health information, strong social support from family members and peers, and specific skills, including a high degree of motivation, self-control, and communication. Programs can also include making an “abstinence plan” so that adolescents are prepared to handle pressure and successfully say no to sex. Furthermore, interventions that address youths’ expectations and worries about sexual activity rather than trying to scare them can enable the adolescent to opt for abstinence after considering the costs and benefits of delaying sexual debut [25].

While abstinence-only programs may have the most impact on youth who have not yet initiated sex, it may not always work—particularly for individuals who have already been sexually active. In such circumstances, a comprehensive approach—including education, counseling, and communication—is needed to delay sexual debut or promote safe sex. Interventions should focus on promoting secondary abstinence, condom use, or monogamous relationship among individuals. These interventions should be typically targeted towards youth. Comprehensive programs may include messages that: reinforce positive individual and group norms, teach safer sexual practices, offer skills in negotiating for safer sex or refusing sex, and provide access to condoms.

Limitations

While this study advances the current state of knowledge on early sexual debut and its association with risk factors for STIs/HIV infection, it must be considered in light of a few study limitations. These include the cross-sectional nature of the study, which limits our ability to establish a temporal relationship. A further limitation is that the study relied on the self-report assessment approach, which may have constrained our ability to precisely measure some variables of interest (i.e., age at first sex, STIs, and sexual risk behaviors) due

to participants' reluctance to report these stigmatized and sensitive issues. In addition, as in prior studies, the variable "sexual debut" was dichotomized for ease of interpretation; further investigation is needed to evaluate the extent to which patterns identified may vary across different age levels.

Conclusion

To our knowledge, this is the first study to examine associations between early sexual debut and increased STIs/ HIV-related risk factors among adults in Nepal. The findings from this population-based study contribute to mounting evidence that young age at sexual initiation is associated with increased risk of STIs/HIV acquisition and onward transmission due to the presence of preventable risk factors, such as sexual risk factors [3, 8, 9, 16], sexual violence [5, 22], and teenage pregnancy [3–5]. Given that two in five individuals have early sexual debut, there is a clear need to develop effective interventions aimed at delaying sexual activity. Furthermore, these interventions should also focus on activities such as promoting condom use, sexual monogamy, and safer sexual behaviors.

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Fig. 1.
Schematic representation of sampling plan for the study

Table 1Characteristics of the participants ($N = 12,756$)

Variables	N	%
Age (years)		
Mean	31.8	
Range ($\pm$ SD)	15–49 (± 8.8)	
Sex		
Female	9768	76.6
Male	2988	23.4
Religion		
Hindu	10,786	84.6
Buddhist	1071	8.4
Muslim	465	3.6
Others ^a	3.6	3.4
Place of residence		
Urban	1775	13.9
Rural	10,981	86.1
Ecological region ^b		
Mountain	838	6.6
Hill	5091	39.9
Terai ^c	6828	53.3
Marital status		
Never married ^d	370	2.9
Married	11,981	93.9
Divorced	132	1.0
Widowed	273	2.1
Educational status		
No education	5190	40.7
Primary	2550	20.0
Secondary	3987	31.3
Higher	1029	8.1
Currently employed ^e		
No	4110	32.2
Yes	8646	67.8
Wealth index		
Poorest	2163	17.0
Poorer	2384	18.7
Middle	2693	21.1
Richer	2722	21.3
Richest	2795	21.9
Smoke cigarettes		

Variables	N	%
No	10,600	83.1
Yes	2156	16.9
Age at first marriage (years)		
Mean	18.1	
Range ($\pm$ SD)	9 – 44 ($\pm$ 3.7)	
Age at first birth (years)		
Mean	20.4	
Range ($\pm$ SD)	11–45 ($\pm$ 3.8)	
Age of coital debut		
16 years	4994	39.2
>16 years	7762	60.8
Mean	17.9	
Range ($\pm$ SD)	8–44 ($\pm$ 3.6)	

^aIncludes Christian, Kirat, and others

^bMeans ecologically and geographically defined area

^cMeans low-lying, plain land

^dIncludes married and living with partner

^eIncludes current employment status

Table 2STIs/HIV-related risk factors among the participants ($N = 12,756$)

Variables	N	%
Ever heard of STI including HIV/AIDS ^a		
No	1359	10.7
Yes	11,397	89.3
History of STI ^b		
No	11,417	89.5
Yes	1339	10.5
Lifetime no. of sex partner		
1–2 partners	12,107	94.9
3–4 partners	382	3.0
5 partners	267	2.1
Mean ($\pm$ SD)	1.4 ($\pm$ 3.7)	
Had multiple sex partners		
No	11,175	87.6
Yes	1581	12.4
Used condom every time in the last 12 months	n = 981	
No	319	32.6
Yes	661	67.4
Used condom during last sex	n = 11,116	
No	10,136	91.2
Yes	981	7.7
Ever paid for sex ^c	n = 2988	
No	2795	93.5
Yes	194	6.5
Respondent can refuse sex	n = 9406	
No	8747	93.0
Yes	659	7.0
Respondent can ask partner to use condom	n = 9406	
No	6828	72.6
Yes	2578	27.4
Ever experienced sexual violence ^d	n = 3449	
No	2926	84.9
Yes	521	15.1
Teenage pregnancy ^e	n = 11,039	
No	5955	53.9
Yes	5084	46.1

^aIncludes STIs and HIV/AIDS^bIncludes bad smelling genital discharge, genital sore/ulcer

^cIncludes participants who completed men's questionnaires only

^dIncludes women who completed domestic violence module questionnaires only

^eItem dichotomized item: Yes: age at first birth between 15 and 19 years; no: age at first birth above 19 years

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Table 3

Relationship between participant characteristics and early sexual debut, listed with ORs and 95 % CIs

Variables	Early sexual debut		
	OR	95 % CI	p
Sex			
Female	–	–	< 0.001 *
Male	0.39	0.35–0.44	
Place of origin			
Urban	–	–	0.568
Rural	0.96	0.85–1.09	
Currently married ^a			
No	–	–	< 0.001 *
Yes	0.55	0.47–0.66	
Educational status			
No formal education	–	–	–
Primary	0.76	0.68–0.84	< 0.001 *
Secondary	0.42	0.38–0.46	< 0.001 *
Higher	0.07	0.05–0.09	< 0.001 *
Currently employed ^b			
No	–	–	< 0.001 *
Yes	0.76	0.69–0.82	
Wealth index			
Poorest	–	–	–
Poorer	1.03	0.91–1.16	0.647
Middle	1.19	1.05–1.34	0.006 *
Richer	0.93	0.82–1.06	0.253
Richest	0.71	0.61–0.82	< 0.001 *
Smokes cigarettes			
No	–	–	0.001 *
Yes	1.22	1.09–1.36	

^a Includes dichotomized item: No: Never married/Divorced/Widowed); Yes: Married/Living with partner)^b Includes current employment status* Statistically significant ($p < 0.05$)

Table 4

Relationship between early sexual debut and STIs/ HIV-related risk factors, listed with odds ratios (ORs) and 95 % confidence Intervals (CIs)

STIs/HIV related risk variables	Early sexual debut			
	OR	95 % CI	Adjusted OR ^a	95 % CI
Ever heard of STIs including HIV/AIDS ^b	0.38***	0.34–0.43	0.69***	0.61–0.78
History of STI ^c	1.41***	1.26–1.58	1.19**	1.06–1.35
Had multiple sex partner	0.93	0.83–1.04	2.14***	1.86–2.47
Used condom every time (last 12 months)	0.67**	0.49–0.89	0.61**	0.44–0.85
Used condom during last sex	0.50***	0.43–0.58	0.72***	0.61–0.86
Ever paid anyone for sex ^d	1.69**	1.23–2.34	1.61**	1.14–2.27
Can refuse sex	1.72***	1.47–2.02	1.29**	1.09–1.52
Can negotiate condom use to partner	2.18***	1.99–2.39	1.59***	1.44–1.75
Ever experienced sexual violence ^e	2.21***	1.83–2.68	1.99*	1.63–2.43
Teenage pregnancy ^f	13.48***	12.28–14.79	12.87***	11.62–14.26

^a Adjusted for age, sex, type of residence, marital status, age at first marriage, educational status, employment status, wealth index, and smoking habit

^b Includes STIs and HIV/AIDS

^c Includes bad smelling genital discharge, genital sore/ulcer

^d Includes individuals who completed men's questionnaires only

^e Includes women who completed Domestic Violence Module only

^f Item dichotomized item: Yes: age at first birth between 15 and 19 years; No: age at first birth above 19 years

Statistically significant

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$