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Development and Validation of a Scale to Measure Adolescent Sexual and Reproductive Health Stigma: Results From Young Women in Ghana

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Abstract

Young women's experiences with sexual and reproductive health (SRH) stigma may contribute to unintended pregnancy. Thus, stigma interventions and rigorous measures to assess their impact are needed. Based on formative work, we generated a pool of 51 items on perceived stigma around different dimensions of adolescent SRH and family planning (sex, contraception, pregnancy, childbearing, abortion). We tested items in a survey study of 1,080 women ages 15 to 24 recruited from schools, health facilities, and universities in Ghana. Confirmatory factor analysis (CFA) identified the most conceptually and statistically relevant scale, and multivariable regression established construct validity via associations between stigma and contraceptive use. CFA provided strong support for our hypothesized Adolescent SRH Stigma Scale (chi-square *p* value < 0.001; root mean square error of approximation [RMSEA] = 0.07; standardized root mean square residual [SRMR] = 0.06). The final 20-item scale included three subscales: internalized stigma (six items), enacted stigma (seven items), and stigmatizing lay attitudes (seven items). The scale demonstrated good internal consistency ($\alpha = 0.74$) and strong subscale correlations ($\alpha = 0.82$ to 0.93). Higher SRH stigma scores were inversely associated with ever having used modern contraception (adjusted odds ratio [AOR] = 0.96, confidence interval [CI] = 0.94 to 0.99, *p* value = 0.006). A valid, reliable instrument for assessing SRH stigma and its impact on family planning, the Adolescent SRH Stigma Scale can inform and evaluate interventions to reduce/manage stigma and foster resilience among young women in Africa and beyond.

Researchers have described stigma as a fundamental social determinant of health and driver of health inequalities (Hatzenbuehler, Phelan, & Link, 2013; Van Brakel, 2006). Stigma is conceptualized as an attribute that deeply discredits and transforms people from whole and usual individuals to tainted, discounted ones (Goffman, 1963). As a social process, stigma is complex, contextual, and dynamic—relating to the disgrace of an individual for an attribute in violation of social expectations and devalued by the larger culture (Goffman, 1963; Hatzenbuehler et al. 2013; Link, Yang, Phelan, & Collins, 2004; Norris et al., 2011; Van Brakel, 2006). Studies have linked numerous stigmatized characteristics (mental illness, minority sexual orientation, obesity, human immunodeficiency virus/acquired immunodeficiency syndrome [HIV/AIDS], disability, minority race/ethnicity) to a host of adverse physical, mental, and social outcomes in samples and settings across the globe. (Cuca et al., 2012; Garnets, Herek, & Levy, 2003; Hatzenbuehler et al., 2013; Herek, 1993; Link et al., 2004; Ritsher, Otilingam, & Grajales, 2003; Turan et al., 2012; Van Brakel, 2006).

In sexual and reproductive health (SRH), the social, cultural, and religious norms that frame adolescent sexual behavior and its consequences (i.e., pregnancy, early childbearing, abortion, sexually transmitted infections [STIs]) as immoral and problematic may contribute to stigma (Atuyambe, Mirembe, Johansson, Kirumira, & Faxelid, 2005; Fenton, 2010; Fourcroy, 2006; Hall, Kusunoki, et al., 2015; Hall, Manu, et al., 2015; Herrman & Waterhouse, 2011; Kelly, 1996; Kimmel & Garnets, 2003; Levandowski et al., 2012; Luker,

1996; Schalet, 2004; Wiemann, Rickert, Berenson, & Volk, 2005). In turn, SRH stigma may pose barriers to and ultimately prevent the use of family planning, subsequently leading to high rates of unintended pregnancy, unsafe abortion, and maternal mortality among young women in Africa and elsewhere (Hall, Manu, et al., 2015; Hindin, Christiansen, & Ferguson, 2013; Singh, Sedgh, & Hussain, 2010; United Nations Population Fund, 2007; World Health Organization, 2004). Recent findings from our qualitative study of 63 adolescents and young adults in Ghana support these hypotheses (Hall, Manu, et al., 2015). Young women's understanding and perceptions of SRH were described as crosscutting several stigma domains: (a) *stigmatizing lay attitudes*, or community beliefs that female adolescents who engage in sex, pregnancy, childbearing, and abortion are "immoral," "disrespectful," "disobedient," and "bad girls"; (b) *enacted stigma*, or the gossip, marginalization, and mistreatment of young women with SRH experiences; and (c) *internalized stigma*, or the "disgrace" and "shame" young women feel as a result of negative attitudes and enacted stigma occurring with their SRH experiences. Stigma was described as precluding young women's use of contraceptive methods and services. Several other studies have reported similar themes specific to stigma associated with adolescent pregnancy in several countries in sub-Saharan Africa and in the United States (Atuyambe et al., 2005; Hall, Manu, et al., 2015; Herrman & Waterhouse, 2011; Kelly, 1996; Levandowski et al., 2012; Wiemann et al., 2005).

These hypotheses, generated from our own research and the findings of other researchers, motivated us to use the present study to develop a formal instrument with which to quantitatively test a conceptual model of stigma as a barrier to family planning. While interventions to reduce or manage adolescent SRH stigma appear warranted, there is a dearth of research on formal, comprehensive measurement approaches necessary to evaluate their impact. Existing reproductive health–related stigma measures have focused specifically on HIV/AIDS and abortion. Validated instruments (e.g., HIV Stigma Scale; HIV/AIDS Stigma Instrument Persons living with AIDS (PLWA); Individual Level Abortion Stigma Scale; Abortion Provider Stigma Survey Instrument; Stigmatizing Attitudes, Beliefs, and Actions Scale) have identified common underlying elements of stigma (Berger, Ferrans, & Lashley, 2001; Cockrill, Upadhyay, Turan, & Foster, 2013; Cuca et al., 2012; Holzemer et al., 2007; Kalichman et al., 2009; Martin et al., 2014; Nybade & MacQuarrie, 2006; Shellenberg, Hessini, & Levandowski, 2014; United States Agency for International Development [USAID], 2005). However, these measures do not capture stigma spanning all important dimensions of SRH, including sex, pregnancy, childbearing, and family planning, nor do they focus on young women, for which stigma experiences may be unique and severe (Fourcroy, 2006; Hatzenbuehler et al., 2013; Hindin et al., 2013; Luker, 1996; Schalet, 2004; United Nations Population Fund, 2007; UNICEF, 2002).

To take a more holistic approach to quantifying reproductive stigmas beyond abortion and HIV/AIDS, we developed, tested, and validated a formal scale to more comprehensively measure multiple dimensions of adolescent SRH stigma, specifically those related to family planning and pregnancy.

Method

Our project entailed standard procedures for scale development using a comprehensive, sequential, mixed-methods design. First, we explored and conceptualized stigma associated with the various dimensions of adolescent SRH through a qualitative study and formative work, described elsewhere and summarized in this section (Hall, Manu, et al., 2015). We used those findings to generate items for a formal scale to measure perceived stigma of adolescent SRH. We then tested and refined our stigma items in a large survey and confirmatory factor analysis (CFA) study. Finally, we validated the construct validity of the new Adolescent SRH Scale by examining relationships between adolescent SRH stigma and rates of modern contraception use among a sample of Ghanaian young women. The study was approved by the institutional ethics review boards/committees of the Ghana Health Service, University of Ghana, Kwame Nkrumah University of Science and Technology, and University of Michigan. We obtained parental consent waivers from all Ghanaian institutional review boards given the sensitive nature of our survey and to ensure confidentiality.

Conceptualization and Item-Pool Generation

Scale development was directly informed by findings from our in-depth, semistructured interviews with 63 women ages 15 to 24 in Accra and Kumasi, Ghana (Hall, Manu, et al., 2015). Interviews elicited information regarding perceptions and experiences (participants' own and/or of women in their communities) with regard to sex, pregnancy, childbearing, abortion, contraception, family-planning services, and STIs. Related preparatory work entailed comprehensive reviews of the literature focused on conceptualizations of stigma broadly, health- and reproductive health–related stigmas, validated stigma measures, and the social context of adolescent SRH (Atuyambe et al., 2005; Berger et al., 2001; Cockrill et al., 2013; Garnets, Herek, & Levy, 2003; Goffman, 1963; Hall, Manu, et al., 2015; Hatzenbuehler et al., 2013; Herek, 1993; Herrman & Waterhouse, 2011; Holzemer et al., 2007; Kalichman et al., 2009; Kelly, 1996; Levandowski et al., 2012; Link et al., 2004; Martin et al., 2014; Norris et al., 2011; Nybade & MacQuarrie, 2006; Ritsher et al., 2003; Shellenberg et al., 2014; Turan et al., 2012; USAID, 2005; Van Brakel, 2006; Wiemann et al., 2005).

Themes and codes from the qualitative interviews and literature review consistently identified three major domains of stigma to address in our new scale: enacted stigma, internalized stigma, and stigmatizing lay attitudes. We generated an initial pool of 51 items reflecting statements about perceptions of stigma and disgrace and shame (internalized stigma), discrimination and marginalization (enacted stigma), and negative community norms (stigmatizing lay attitudes) that may occur with adolescent sex, pregnancy, childbearing, abortion, and family planning. Response options were on a 3-point Likert scale (*Disagree, Neutral, Agree*).

Once the pool was generated, 11 researchers constituting our study team (including survey methodologists, a stigma expert, and a statistician) independently reviewed the items for interpretability, readability, focus, and content and face validity. This process included review by our stigma research expert for face validity of specific items covering various

stigma domains (e.g., internalized and enacted stigma). The survey was then comprehensively evaluated by in-country team members in a series of intensive training activities. We pilot-tested the survey in interviews with a convenience sample of 25 young women from our targeted recruitment sites to ensure comprehension. At this stage, items required only minor editing.

Survey Administration

We fielded the new stigma items in a survey study of 1,080 women ages 15 to 24 recruited from community- and clinic-based sites in Accra and Kumasi, Ghana. A cluster sampling technique was used to obtain participants from four senior high schools within the Ghana Educational Service, five Ghana Health Service facilities, and two universities. This sampling frame provided heterogeneity in types of clinics (antenatal, postnatal, family planning, adolescent, abortion, child welfare) and schools (public, coeducation, female only) and the populations they serve.

After participants gave informed consent, all eligible, enrolled study participants completed the confidential tablet-based survey interviews with trained research assistants. Survey completion times ranged from 30 to 90 minutes, which was determined by the extent of participants' SRH histories given the cumulative nature of content. Participants were offered a prepaid telephone card as appreciation for their time.

Confirmatory Factor Analysis

Given the strong theoretical and measurement foundation of health-related stigma on which our study was based, CFA was deemed the most appropriate method to test and hone our Adolescent SRH Stigma Scale. CFA is a particular form of structural equation modeling (SEM) that can be used to test whether measures of an underlying construct (i.e., stigma) are consistent with the construct's nature, based on theory and previous research, and whether data support the hypothesized measurement model and factor structure for a set of observed variables. CFA is in contrast to exploratory factor analysis (EFA), which is appropriate when the domains of interests are new or undefined, or for which there is limited a priori theoretical understanding (Kline, 2010; Thompson, 2004).

In CFA linear regression models, item responses were treated continuously (0, 1, 2), and factor loadings (standardized coefficients) of ≥ 0.30 and p values < 0.01 were an initial criterion for retention. With an initial three-factor and 51-item model as our theory-guided starting point, we used a backward elimination approach to remove individual items with low standardized factor loadings one by one and examined changes in model fit. Once we had a reduced model, we then used a forward selection process to reevaluate several conceptually important items and ensure we had the most statistically and theoretically relevant scale, including several with loadings of < 0.30. In the end, we retained four items with loadings ≥ 0.25 and p values < 0.001 that improved model fit. We calculated chi-square, root mean square error of approximation (RMSEA), comparative fit index (CFI), and standardized root mean square residual (SRMR) goodness-of-fit statistics and Cronbach's alphas to assess the internal consistency of items.

Based on CFA results, 20 items were selected for the final Adolescent SRH Stigma Scale. From these items, we generated a stigma score (overall and for each subscale) for the scale validation analysis. We created an additive index, whereby responses of *Agree* were coded as 1 and summed for a total score, with scores ranging from 0 to 20 and higher scores indicating higher levels of perceived stigma.

Scale Validation

To assess the scale's construct validity using the known group method, we tested for differences in SRH stigma among two groups that we expected would have differing levels of stigma: ever having used versus never having used modern contraceptive methods. Modern methods included oral contraceptives, intrauterine devices, injectables, implants, and/or condoms. Our analytic sample eligible for the CFA included participants who completed all 51 stigma items ($N = 990$). Women who reported sexual intercourse experience received the contraceptive history items and were thus eligible for the validation analysis ($N = 677$). We used descriptive and bivariate tests (chi-square, student's t test) to describe and compare sociodemographic characteristics and stigma scores among contraceptive users versus nonusers. We used multivariable logistic regression with cluster-based standard errors (SEs) for recruitment site to assess relationships between modern contraceptive use and SRH stigma while controlling for sociodemographic, health, and reproductive history covariates. Covariates were considered for inclusion in regression models if their p values in bivariate analyses were < 0.25. We present results from the reduced model controlling for significant covariates. We present descriptive results as frequencies with percentage or means (M) with standard deviations (SD), CFA results as standardized coefficients with 95% confidence intervals (CI), and logistic regression results as adjusted odds ratios (AOR) with 95% CIs. We used Stata 13.0 (College Station, TX) for all analyses.

Results

Sample characteristics are described in Table 1.

Adolescent SRH Stigma Scale

The CFA provided strong support for a three-factor Adolescent SRH Stigma Scale consistent with our hypothesized construct and structure (Table 2, chi-square $p < 0.001$; RMSEA = 0.074; SRMR = 0.065). The scale included 20 items with three subscales: internalized stigma (six items), enacted stigma (seven items), and stigmatizing lay attitudes (seven items). Scale items demonstrated strong statistical significance (all ps < 0.001) and moderately strong factor loadings (standardized coefficients 0.25 to 0.51). The overall scale had good internal consistency ($\alpha = 0.74$) and high between-subscale correlations ($\alpha = 0.82$ to 0.93).

Descriptions of the scale, subscales, and individual items are presented in Table 3. The sample mean Adolescent SRH Stigma Scale score was 13.12 (SD 3.82, range 1 to 20). In other words, on average, women agreed with 66% of the stigma statements; 16 of the 20 had greater than 50% agreement. Subscale scores were highest for internalized stigma ($M =$

4.56, *SD* = 1.84, range = 0 to 7), followed by enacted stigma (*M* = 4.29, *SD* = 1.43, range = 0 to 6), and stigmatizing lay attitudes (*M* = 4.27, *SD* = 1.48, range = 0 to 7). Generally, the highest rates of agreement were reported for items pertaining to abortion (63% to 91%), sex (57% to 87%), and childbearing/pregnancy (49% to 79%) stigma; lower agreement rates were reported for family-planning stigma (31% to 66%) (Table 3).

Associations Between Adolescent SRH Stigma and Contraceptive Use

In unadjusted analyses (Table 4), Adolescent SRH Stigma scores were approximately 1 point higher among young women with never having used versus ever having used modern contraception (*M* = 13.48 versus 12.61, *p* = 0.004). Internalized stigma and stigmatizing lay attitudes scores were similarly higher among never having used versus ever having used contraceptives (0.49 points higher, *p* = 0.001; 0.34 points higher, *p* = 0.004, respectively). In the multivariable analysis (Table 5), every one-point increase in Adolescent SRH Stigma scores was associated with a 3% reduced odds of having ever used modern contraception (AOR = 0.97, CI = 0.94 to 0.99, *p* = 0.006). In models testing associations between Adolescent SRH Stigma subscales and contraceptive use (not shown), internalized stigma (AOR = 0.926, CI = 0.857 to 1.000, *p* = 0.051) and stigmatizing lay attitudes (AOR = 0.929, CI = 0.854 to 1.011, *p* = 0.088) demonstrated marginally significant effects.

Discussion

Our study developed, tested, and validated a new scale to measure perceived stigma of adolescent SRH, especially related to family planning and pregnancy. The resulting 20-item Adolescent SRH Stigma Scale measures three stigma major domains: enacted stigma, internalized stigma, and stigmatizing lay attitudes. The scale demonstrated strong face, content, and construct validity, reliability, and internal consistency, with good model fit statistics, significant factor loadings, and moderate correlation coefficients (inter-item and interscale). The resulting conceptualization of stigma is consistent with our prior qualitative work, existing theoretical frameworks, and other health-related stigma measures (Atuyambe et al., 2005; Berger et al., 2001; Cockrill et al., 2013; Garnets, Herek, & Levy, 2003; Goffman, 1963; Hall, Manu, et al., 2015; Hatzenbuehler et al., 2013; Herek, 1993; Herrman & Waterhouse, 2011; Holzemer et al., 2007; Kalichman et al., 2009; Kelly, 1996; Levandowski et al., 2012; Link et al., 2004; Martin et al., 2014; Norris et al., 2011; Nybade & MacQuarrie, 2006; Ritsher et al., 2003; Shellenberg et al., 2014; Turan et al., 2012; USAID, 2005; Van Brakel, 2006; Wiemann et al., 2005).

Our study advances the literature by expanding measurement of reproductive stigmas to include experiences beyond abortion and HIV/AIDS—specifically to highlight the similarities and differences between stigmas occurring across a broader SRH continuum, including family planning. Among our sample of Ghanaian young women, stigma experiences were strikingly similar. That is, while sex, pregnancy, child-bearing, and abortion may represent distinct events, the negative community beliefs, discrimination, marginalization, mistreatment, and feelings of shame and disgrace that accompany those experiences appear quite comparable. Moreover, our focus on young women provides insight into SRH stigma during adolescence and young adulthood —critical developmental

phases which have important implications for physical, mental, and reproductive health across the life course (Hindin et al., 2013; UNICEF, 2002; United Nations Population Fund, 2007).

Young women in our study reported high levels of perceived SRH stigma overall (i.e., agreement with stigma statements up to 91%) and fairly consistent levels across the three subscales. Not surprisingly and in line with prior abortion research, the highest levels of perceived stigma were noted for abortion (Cockrill et al., 2013; Shellenberg et al., 2014). Yet we also found high perceived stigma around sex, pregnancy, and childbearing. Interestingly, lower levels of perceived family-planning stigma were coupled with negative effects of SRH stigma on contraceptive use. This paradox has clinical and public health relevance given that sex (and disclosure of it) is an antecedent to family planning, while pregnancy and abortion are consequences of sex and unmet family-planning needs. The new scale enabled us to quantify a 3% reduction in the odds of contraceptive use with every 1-point increase in SRH stigma scores, which may seem modest. However, with a scale range of 0 to 20, the wide distribution of scores, and clinically meaningful effect sizes of 10% to 20% in contraceptive behavior studies, we believe the impact of SRH stigma on family-planning outcomes documented here is worthy of consideration. That is, a mere 3-point difference in stigma scores across individual or groups of women easily translates to a real risk of unintended pregnancy.

Strengths of our study include its (a) use of rigorous, standard psychometric procedures for scale development, (b) consideration of a more robust set of reproductive and family-planning stigmas than prior studies to date, (c) resulting conceptualization of stigma and stigma domains that are consistent with other theoretical and empirical evidence, and (d) focus on adolescents and unmarried young women, an understudied population in family-planning research in sub-Saharan Africa.

Study limitations are also noteworthy. Our scale does not capture an exhaustive set of potential stigma domains, for instance, disclosure and stigma resilience. Nor does it measure all possible dimensions of SRH, including stigmas associated with sexual minority status, STIs, sexual function disorders, or others. Our scale focuses on perceived stigma and does not directly assess experiences with enacted and internalized stigma following sex, pregnancy, abortion, and childbirth events—although perceptions may likely be shaped by women's own experiences and those of others in their communities. Given the sensitive nature of our SRH focus, social desirability and reporting bias likely impacted our results. Our findings may not be generalizable to other cultural and geographic contexts beyond Ghana, in which SRH stigma may be localized and potentially less or more severely experienced by young women. Indeed, studies are needed to validate the Adolescent SRH Stigma Scale in settings and samples across the globe, especially underexamined research contexts where the social acceptability of adolescent sex, contraceptive use, pregnancy, and abortion may be different than in sub-Saharan Africa. Research is also needed to explore SRH stigma among older women and among men. Finally, future studies can assess the potential stigma experienced as a result of participation in SRH studies among adolescent research subjects.

Nonetheless, the Adolescent SRH Stigma Scale offers a valid and reliable instrument to measure stigma across the spectrum of SRH and its impact on family-planning outcomes. The scale may hold utility for international comparisons of SRH stigma in contexts with supportive versus unsupportive social, political, cultural, and religious environments. Our own ongoing research is testing the new scale in the United States. Ultimately, findings may inform interventions to reduce and manage stigma associated with adolescent SRH in order to improve the health and social well-being of young women in Africa, the United States, and beyond.

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Table 1

Sociodemographic and Reproductive History Characteristics of the Sample (N = 990)

Characteristics	*M*	*SD*	*n*	%
Age (mean)	19.95	2.70		
Age (by year)				
15			45	4.55
16			74	7.48
17			112	11.32
18			99	10.01
19			105	10.62
20			126	12.74
21			89	9.00
22			109	11.02
23			119	12.03
24			111	11.22
City				
Accra			488	49.29
Kumasi			502	50.71
Recruitment site type				
Health facility			590	59.60
Senior secondary school			190	19.19
University			210	21.21
Ethnic group				
Akan			510	51.62
Ga/Dangme			138	13.97
Ewe			130	13.16
Other			210	21.26
Educational attainment				
No formal education			52	5.25
Primary			113	11.41
Middle/JSS/JHS			409	41.31
Secondary/SSS/SHS			374	37.78
Higher (university)			42	4.24
Employment in past seven days				
No			725	73.31
Yes			264	26.69
Religious affiliation				
Pentecostal/Charismatic			376	38.02
Catholic			121	12.23
Christian (Anglican, Methodist, Presbyterian)			250	25.28
Other Christian			111	11.22
Muslim			121	12.23

Characteristics	*M*	*SD*	*n*	%
None			10	1.01
Religious attendance				
At least once a week			789	79.70
At least once a month			160	16.16
Less than monthly			41	4.14
Religious importance				
Not at all important			6	0.61
Somewhat important			21	2.13
Important			191	19.33
Very important			518	52.43
Extremely important			252	25.51
Relationship status				
Married/engaged			152	15.37
Cohabiting with partner			123	12.44
In a serious relationship but not cohabiting			207	20.93
Dating casually/having sex with acquaintance			129	13.04
None/other			378	38.22
Health insurance				
No			236	23.84
Yes			754	76.16
Self-rated health				
Excellent			154	15.56
Very good			465	46.97
Good			332	33.54
Fair			34	3.43
Poor			5	0.51
Family-planning service use				
Never received family-planning services			640	65.37
Ever received family-planning services			339	34.63
Ever had sex with male partner				
No			308	31.27
Yes			682	68.73
Ever pregnant [a,d]				
No			194	28.45
Yes			488	71.55
Ever had abortion [a,b]				
No			377	77.89
Yes			105	21.69
Ever used modern contraception [a,c]				
No			220	32.50
Yes			457	67.50

Characteristics	*M*	*SD*	*n*	%
Used contraception at last sex [a,c]				
No			270	60.13
Yes			179	39.87

Notes. $N = 990$. Results presented as frequencies (*n*) and percentages (%) or means (*M*) with standard deviations (*SD*). *N*s across characteristics may not add to 990 due to < 1% missing data across some items. Reproductive history items among those who reported having a history of sexual intercourse:

[a] pregnancy;

[b] contraceptive use;

[c] five respondents had missing data on sexual history but reported a pregnancy and were thus coded "yes" to "Ever had sexual intercourse."

Table 2

Confirmatory Factor Analysis Results With Final Adolescent Sexual and Reproductive Health Stigma Scale Items

Adolescent SRH Stigma Subscales and Items	Standardized Coefficient	*p* > *z*	95%	CI
Enacted stigma				
People behave differently toward a teen whom they know has had sex	0.265	< 0.001	0.189	0.340
People behave differently toward a teen whom they know has had an abortion	0.365	< 0.001	0.295	0.436
People behave differently toward a teen whom they know has used modern family-planning methods	0.498	< 0.001	0.392	0.529
Having sex as a teen often leads to getting beaten or physically hurt by one's parents	0.410	< 0.001	0.343	0.476
Becoming pregnant and having a baby as a teen would cause people to behave differently around me	0.346	< 0.001	0.274	0.417
Becoming pregnant and having a baby as a teen would cause others to tease, insult, swear, or gossip about me	0.321	< 0.001	0.248	0.393
Internalized stigma				
Having sex as a teen is a form of disobedience	0.475	< 0.001	0.414	0.536
Young women who have abortions are bad girls	0.512	< 0.001	0.452	0.572
Young women who use modern family planning are promiscuous	0.363	<0.001	0.296	0.429
Teens who use modern family planning are viewed as bad girls	0.475	< 0.001	0.414	0.535
Having sex as a teen brings disgrace and shame to a young woman and her family	0.498	< 0.001	0.439	0.558
Becoming pregnant and having a baby as a teen would bring disgrace to my family	0.304	< 0.001	0.232	0.376
Becoming pregnant and having a baby as a teen would make me feel ashamed and bad about myself	0.386	< 0.001	0.317	0.454
Stigmatizing lay attitudes				
Young women who have abortions will encourage others to have abortions	0.400	< 0.001	0.331	0.469
Modern family planning is not acceptable for unmarried women	0.352	<0.001	0.281	0.423
Modern family-planning methods have bad effects on a woman's health	0.286	<0.001	0.211	0.360
Having an abortion is committing murder	0.307	< 0.001	0.235	0.378
The media, including the television, Internet, or magazines, has a strong impact on teens' sexual behavior	0.256	< 0.001	0.183	0.329
When teens have sex for the first time, it is usually because they were pressured by their friends or partners to do so	0.317	<0.001	0.244	0.390
Children born to teen parents are worse off than those born to adults	0.249	< 0.001	0.176	0.321
Subscale covariance	α	*p* > *z*	95%	CI
Covariance (enacted, internalized)	0.914	< 0.001	0.827	1.002
Covariance (enacted, attitudes)	0.822	< 0.001	0.704	0.940
Covariance (internalized, attitudes)	0.929	< 0.001	0.835	1.022

Notes. *N* = 990. SRH = sexual and reproductive health. Results presented as standardized coefficients with 95% confidence intervals (CIs) and *p* values (*p*) from confirmatory factor analysis models using linear regression with scale items treated as continuous (0 = *Disagree*; 1 = *Neutral*; 2 = *Agree*). Subscale covariances presented as correlation coefficients (α) with 95% CI and *p* values. Model fit statistics: RMSEA = 0.074; CFI = 0.614, SRMR = 0.065. Information on the initial pool of 51 items is available upon request.

Table 3

Adolescent Sexual and Reproductive Health Stigma Scale, Subscales, and Item Descriptives

	% Agree (1)	% Neutral (0)	% Disagree (0)	Mean Score	*SD*
Overall stigma scale (possible range 0 to 20)				13.12	3.82
Enacted stigma subscale (possible range 0 to 6)				4.29	1.43
People behave differently toward a teen whom they know has had sex	75.66	11.62	12.73		
People behave differently toward a teen whom they know has had an abortion	82.22	7.58	10.20		
People behave differently toward a teen whom they know has used modern family-planning methods	61.31	18.18	20.51		
Having sex as a teen often leads to getting beaten or physically hurt by one's parents	56.87	20.40	22.73		
Becoming pregnant and having a baby as a teen would cause people to behave differently around me	73.64	7.37	18.99		
Becoming pregnant and having a baby as a teen would cause others to tease, insult, swear, or gossip about me	78.99	10.61	10.40		
Internalized stigma subscale (possible range 0 to 7)				4.56	1.84
Having sex as a teen is a form of disobedience	71.82	13.13	15.05		
Young women who have abortions are bad girls	67.88	12.53	19.60		
Young women who use modern family planning are promiscuous	45.76	22.63	31.62		
Teens who use modern family planning are viewed as bad girls	65.86	11.41	22.73		
Having sex as a teen brings disgrace and shame to a young woman and her family	65.25	12.73	22.02		
Becoming pregnant and having a baby as a teen would bring disgrace to my family	70.71	8.79	20.51		
Becoming pregnant and having a baby as a teen would make me feel ashamed and bad about myself	68.69	11.21	20.10		
Stigmatizing lay attitudes subscale (possible range 0 to 7)				4.27	1.48
Young women who have abortions will encourage others to have abortions	63.24	17.17	18.99		
Modern family planning is not acceptable for unmarried women	30.71	18.79	50.51		
Modern family-planning methods have bad effects on a woman's health	46.36	28.79	24.85		
Having an abortion is committing murder	91.41	4.14	4.44		
The media, including the television, Internet, or magazines, has a strong impact on teens' sexual behavior	86.67	7.78	5.56		
When teens have sex for the first time, it is usually because they were pressured by their friends or partners to do so	59.29	20.00	20.71		
Children born to teen parents are worse off than those born to adults	48.99	26.36	24.65		

Notes. $N = 990$. Results presented as proportions (%) of respondents who selected *Agree, Disagree*, or *Neutral* for each stigma scale item. Summary results for the overall scale and each subscale are presented as mean scores with standard deviation (*SD*) from additive indices (overall and for each subscale) where *Agrees* were coded 1 and *Disagrees/Neutrals* coded 0 and items summed for total and subscores. Information on the initial pool of 51 items is available upon request.

Table 4

Unadjusted Associations Between Adolescent Sexual and Reproductive Health Stigma, Sociodemographic, Health, and Reproductive Characteristics, and Ever Used Modern Contraception

	Never Used Contraception (*n* = 220) (% or *M* ± *SD*)	Ever Used Contraception (*n* = 457) (% or *M* ± *SD*)	Test Statistic		
			t	χ^2	*P*
Adolescent SRH Stigma Scale					
Full stigma scale **	13.477 ± 0.243	12.6105 ±0.1713	2.898		0.0039
Enacted stigma subscale	4.268 ± 0.097	4.223 ± 0.065	0.3885		0.6978
Internalized stigma subscale **	4.791 ±0.117	4.304 ± 0.086	3.2789		0.0011
Stigmatizing lay attitudes subscale **	4.418 ± 0.092	4.083 ± 0.068	2.8551		0.0044
Age ***	19.545	21.212	−8.4799		< 0.001
City **				8.5734	0.003
Accra	37.27	49.23			
Kumasi	62.73	50.77			
Recruitment site type **				10.1876	0.006
Health facility	88.18	80.09			
Senior secondary school	5.00	4.38			
University	6.82	15.54			
Ethnic group				5.0660	0.167
Akan	47.49	51.10			
Ga/Dangme	15.98	12.06			
Ewe	10.05	14.25			
Other	26.48	22.59			
Educational attainment ***				20.7159	< 0.001
No formal education	9.09	7.00			
Primary	20.45	13.35			
Middle/JSS/JHS	41.82	34.35			
Secondary/SSS/SHS	27.27	39.61			
Higher (university)	1.36	5.69			
Employment in past seven days				2.5775	0.108

	Never Used Contraception (n = 220) (% or $M \pm SD$)	Ever Used Contraception (n = 457) (% or $M \pm SD$)	Test Statistic		
			t	χ^2	P
No	69.09	62.80			
Yes	30.91	37.20			
Religious affiliation				10.7636	0.056
Pentecostal/Charismatic	31.05	41.14			
Catholic	11.42	12.47			
Christian	27.85	24.73			
Other Christian	10.96	9.85			
Muslim	17.35	10.28			
None	1.37	1.53			
Religious attendance				1.5261	0.466
At least once a week	79.09	75.49			
At least once a month	17.27	19.84			
Less than monthly	3.64	5.47			
Religious importance				7.0414	0.134
Not at all important	0.91	0.88			
Somewhat important	1.83	3.07			
Important	27.85	22.59			
Very important	54.34	50.88			
Extremely important	15.07	22.59			
Health insurance				0.6709	0.413
No	17.27	19.91			
Yes	82.73	80.09			
Relationship status***				39.8790	< 0.001
Married/engaged	14.09	25.88			
Cohabiting with partner	18.64	17.9			
In a serious relationship	20.45	27.63			
Dating casually/having sex with acquaintance	15.45	15.79			
None/other	31.36	12.72			
Self-rated health				2.0227	0.732
Excellent	8.64	11.82			

	Never Used Contraception (*n* = 220) (% or *M* ± *SD*)	Ever Used Contraception (*n* = 457) (% or *M* ± *SD*)	Test Statistic		
			t	χ^2	*P*
Very good	49.09	47.70			
Good	37.73	35.45			
Fair	4.09	4.16			
Poor	0.45	0.88			
Ever pregnant **				8.5838	0.003
No	20.91	31.73			
Yes	79.09	68.27			
Ever had abortion (*n* = 484) ***				25.9919	< 0.001
No	91.23	71.25			
Yes	8.77	28.75			

Notes. Subsample is women who reported ever having sexual intercourse (*N* = 677). Results are presented as mean stigma scores with standard deviations (*SD*) of stigma scores among never versus ever contraceptive users; and % of never versus ever used contraception across sociodemographic and reproductive history groups. Statistical comparisons with chi-square (for binary/categorical variables) or student's *t* tests (continuous variables).

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$.

Table 5

Adjusted Models Estimating Relationships Between Adolescent SRH Stigma and Ever Used Modern Contraception

	AOR	Robust SE	*P*	95% CI	
Adolescent SRH Stigma Scale **	0.966	0.012	0.006	0.942	0.990
Age ***	1.273	0.054	< 0.001	1.172	1.382
City ***					
Accra (ref)	1.000	—	—	—	—
Kumasi	0.463	0.041	< 0.001	0.390	0.550
Ethnic group ***					
Akan (ref)	1.000	—	—	—	—
Ga/Dangme	0.548	0.093	< 0.001	0.393	0.765
Ewe	0.882	0.225	0.623	0.535	1.454
Other	1.022	0.263	0.932	0.618	1.692
Educational attainment *					
None (ref)	1.000	—	—	—	—
Primary	1.002	0.507	0.997	0.372	2.699
Middle	1.193	0.309	0.495	0.718	1.983
Secondary	1.314	0.279	0.198	0.867	1.991
Higher *	2.614	1.133	0.027	1.117	6.116
Religious affiliation ***					
Pentecostal/Charismatic (ref)	1.000	—	—	—	—
Catholic	0.955	0.362	0.904	0.455	2.007
Anglican, Methodist, or Presbyterian	0.802	0.216	0.412	0.473	1.359
Other Christian	0.946	0.305	0.862	0.503	1.778
Muslim	0.379	0.102	< 0.001	0.224	0.643
None	0.886	0.879	0.903	0.127	6.189
Relationship status *					
Married or engaged (ref)	1.000	—	—	—	—
Cohabiting	0.659	0.110	0.012	0.475	0.914
In serious relationship	1.036	0.269	0.893	0.622	1.724

	AOR	Robust SE	*P*	95% CI	
Casually dating/having sex	0.962	0.388	0.923	0.436	2.121
None/other	0.433	0.157	0.021	0.213	0.881

Notes. Subsample is women who reported ever having sexual intercourse ($N = 677$). Results from final reduced multivariable logistic regression model with cluster effect for recruitment site. Results presented as adjusted odds ratios (AOR) with 95% confidence intervals (CIs), *p* values, and robust standard errors (SE). Ref = reference category. Subscales tested separately in final model: enacted stigma (AOR = 1.04, $p = 0.516$, CI = 0.925 to 1.167); internalized stigma (AOR = 0.926, $p = 0.051$, CI = 0.857 to 1.000); stigmatizing lay attitudes (AOR = 0.929, $p = 0.088$, CI = 0.854 to 1.011).

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$.