The Relationship Context of Adolescent Fertility In Southeastern Ghana

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CONTEXT: Little is known about relationship types and processes linked to adolescent pregnancy and childbearing in Sub-Saharan Africa. A greater understanding of the role of relationships could help in the design of interventions to reduce adolescent fertility.

METHODS: Data on 365 romantic and sexual relationships were collected from 298 adolescent female participants of a survey conducted in two towns in southeastern Ghana. Bivariate and multivariate analyses examined associations between adolescent fertility (i.e., pregnancy and childbearing) within a relationship and selected independent variables, such as the age difference between a woman and her partner, the partner's provision of basic and auxiliary financial support, the power disparity within the relationship, and cohabitation or marriage.

RESULTS: Adolescent fertility occurred in 17% of relationships. Across model specifications, the strongest predictors of adolescent fertility were the partner's provision of basic financial support, and cohabitation or marriage. Increasing power disparity was associated with greater odds of adolescent fertility in some models. Being in a relationship with a partner five or more years older was associated with adolescent fertility in bivariate, but not multivariate, analyses.

CONCLUSION: Adolescent pregnancy and childbearing in southeastern Ghana may be best understood as an aspect of relationship solidification and family formation along a gendered pathway to adulthood. Interventions that help young women avoid relying on sexual relationships as a source of financial support could be helpful in reducing adolescent fertility.

Reducing fertility among adolescents in Sub-Saharan Africa is a priority for international health and development agencies.[1–3] Adolescent pregnancy and childbearing are considered problematic because of their associations with adverse health and social consequences, including maternal mortality[4] and obstetric fistula,[5] as well as lower levels of educational attainment.[6] The adolescent birthrate—the number of live births per 1,000 person-years lived by women aged 15–19 years in a calendar year—for Sub-Saharan Africa is 116, which is higher than that for any other region of the world.[7] Ghana—the setting for this study—has an adolescent birthrate of 76, which is not the region's highest,[8] but is higher than the averages for all developed (17) and developing countries (56).[7] Most interventions intended to reduce adolescent fertility and other sexual health risks in Sub-Saharan Africa by increasing knowledge or changing attitudes have had little or no impact on behavioral or biological endpoints,[9,10] perhaps because they were poorly matched to the drivers of adolescent fertility in the region.

In some parts of Sub-Saharan Africa, early marriage remains prevalent and is the primary driver of adolescent fertility;[11,12] in those settings, efforts to reduce adolescent fertility should focus on the issue of child marriage. In other parts of the region, however, the median age at marriage has been increasing, but not the age of sexual initiation.[13,14] This is true in Ghana, where the median age at first marriage for women stands at 20.7, the median age at first sex is 18.4 and the majority of adolescent fertility occurs out of wedlock.[8] In Ghana and similar settings, therefore, early marriage is not a major driver of adolescent fertility.

A growing body of research has identified several individual, family, school and peer-group characteristics that may influence the risk of fertility, along with their behavioral antecedents, among adolescent women (and men) in Sub-Saharan Africa. These include being out of school, having older classmates, having low educational aspirations, receiving little parental monitoring or supervision and perceiving that peers are sexually active.[9–22]

Less attention has been paid to the characteristics of romantic and sexual relationships that influence young women's risk of becoming pregnant and bearing a child. To understand how aspects of these relationships influence young women's fertility risk, however, it is necessary to situate them within the broader social system of which gender is a fundamental organizing principle. By gender, we mean "a multilevel system of difference and inequality...[that] involves cultural beliefs

and distributions of resources at the macro-level, patterns of behavior and organizational practices at the interactional level, and selves and identities at the individual level."[23 (pp. 510–511)] Romantic and sexual relationships exist at the interactional level, and the gender system shapes the nature of those relationships, as well as expectations regarding men's and women's respective positions, roles and responsibilities within them. In patriarchal societies, these include men's role as providers of material and financial support, and women's role as providers of domestic labor (e.g., cooking and cleaning) and reproductive labor (i.e., childbearing and childrearing).[24] Thus, relationship characteristics are best regarded not as independent risk factors, but rather as deeply interconnected manifestations of the broader gender system.

Relationship contexts have received little attention in research on adolescent fertility; however, more research has assessed relationship factors associated with HIV risk for adolescent women in Sub-Saharan Africa, and findings may be relevant to adolescent fertility. Among the more widely studied factors is partner age. Studies in eastern and southern African countries have shown that involvement in an age-disparate relationship is an HIV risk factor among young women in Sub-Saharan Africa.[25–27] This could be because HIV prevalence increases with age in men and, therefore, partner age captures the likelihood that a partner is infected—a mechanism that should have no bearing on adolescent fertility. Yet, one recent study of adolescent women in South Africa found that engaging in age-disparate sex was associated with increased risk of pregnancy.[28]

Another focus of research on relationship contexts of adolescent women's HIV risk in Sub-Saharan Africa—and closely connected to partner age—is economic asymmetries, financial motivations and economic support. Transactional sexual relationships—noncommercial, nonmarital relationships based on an implicit assumption that sex will be exchanged for material support or other benefits—have been documented throughout Sub-Saharan Africa,[29–31] including Ghana,[32–36] and have been shown to be positively associated with young women's risk of HIV.[37–39] The structural drivers of and motivations for women's participation in transactional sex range widely from poverty leading women to exchange sex for basic needs to use of exchange relationships to acquire luxury items that symbolize modernity and enhance social status.[40] Research has been inconclusive on which set of motivations and determinants is more risky;[41] however, studies have shown that financial transactions between adolescent women and their male partners are associated with an increased likelihood of unprotected sex,[42–44] a finding that may have implications for adolescent fertility.

Age disparities and financial transactions may lead to an increased risk of adolescent fertility through at least two mechanisms. First, they could exacerbate power differentials between adolescent women and their male partners, making it more difficult for young

women to assert their preferences and protect themselves from pregnancy. In patriarchal societies, including Ghana's, women and men both expect that men will hold decision-making power in relationships.[45,46] Across many contexts in Sub-Saharan Africa, young people are expected to show deference to their elders and this may be true in romantic and sexual relationships as well. And in relationships motivated by financial support, women's economic dependence may render them even more vulnerable. Indeed, according to the Theory of Gender and Power, women's financial dependence on male partners is one of the key sources of male authority.[47,48] As a woman's level of power in a sexual relationship decreases, her probability of being HIV positive increases.[37,49,50] Power differentials may be linked to increased risks of pregnancy and childbearing through similar behavioral mechanisms.[28]

Another mechanism that may link age disparities and financial transactions to adolescent women's fertility risk involves family formation as a pathway to adulthood. For many young women, especially those who face limited opportunities for educational attainment and gainful employment, pregnancy and childbearing may be an attractive alternative pathway to adulthood,[51,52] albeit one with risk of greater poverty if the partner cannot provide support.[53] In such circumstances, therefore, a woman may place a high premium on a partner who is able to provide for her. Indeed, young women commonly expect financial support in sexual relationships, and in many Sub-Saharan African settings, the provision of such support is intricately linked to commitment and love, in marital relationships and increasingly in premarital relationships.[33,54,55] In much of Sub-Saharan Africa, pregnancy traditionally has occurred before the completion of marital rites,[56] and this may be even more common now, as many young couples cannot afford the costs of a formal wedding ceremony or bridewealth payments.[57] Thus, for adolescent women in relationships with older male partners, an increasing level of male financial support and initiation of childbearing may be two deeply interconnected parts of a single process of deepening commitment and relationship solidification.[34]

In this article, we examine how the relationship characteristics discussed above influence the likelihood of pregnancy and childbearing among adolescent women in Ghana. We hypothesize that pregnancy and childbearing will be more likely to occur in relationships with employed and older male partners than in those with in-school or similar-aged partners. We then examine if the links between partner characteristics and adolescent fertility are explained by financial support, power disparity or emotional investment in the relationship. This research sheds light on the extent to which adolescent fertility in this setting is better explained as a consequence of men's power over their young partners or as a manifestation of family formation processes along women's pathway to adulthood.

METHODS

Study Setting and Sample

Data were drawn from the Gendered Social Contexts in Ghana study, which was conducted between 2010 and 2013 in two towns in southeastern Ghana: Agomanya in Lower Manya Krobo District of Eastern Region and Juapong in Central Tongu District of Volta Region. Both towns are peri-urban communities of around 15,000 residents located along the main road connecting Accra, the national capital, with Ho, the capital of Volta Region. Agomanya is the site of a major regional market and is populated predominantly by people of the Krobo ethnic group; Juapong has a large textile factory and is populated predominantly by people of the Ewe ethnic group. In contrast to Ghana's largest ethnic groups (the Akans, including Ashanti, Fante and others), who mainly practice matrilineal descent, the Krobos and Ewes both practice patrilineal descent.

Ghana is relatively developed by Sub-Saharan African standards, as it is one of just a handful of countries in the region classified as a medium human development country by the United Nations Development Program.[58] The vast majority of recent cohorts of Ghanaian women received at least some schooling, the majority completed primary school and many attended some secondary school;[8] this has resulted in a high level of gender parity for both primary and secondary schooling. Even so, most adolescent women in Ghana do not complete secondary school, and the prospects of finding stable employment in the formal sector of the economy remain bleak for women (and men) without a secondary education.[59] Many young women, therefore, find employment or are self-employed in low-paid activities such as petty trading or working as a hairdresser or seamstress;[60] others rely on male partners for some or all of their financial support and, in return, often provide domestic labor and reproductive labor.[33]

Wave 1 of the study was conducted in July and August 2010. Field teams from the University of Ghana recruited and interviewed a random sample of 1,275 unmarried adolescents (700 females and 575 males) aged 13, 14, 18 and 19 in Agomanya and Juapong; the overall response rate was 75%. Wave 2 interviews were conducted in March and April 2012, and Wave 3 interviews were conducted in July 2013. Data used in our analyses come from the relationships modules included in the Wave 3 interviews, in which respondents provided detailed information on up to three romantic or sexual relationships. Wave 3 interviews were completed by 86% of the original female sample, or a total of 605 female respondents. Of these young women, 298 provided detailed information on one or more relationships, which resulted in our analytic data set of 365 relationships beginning when respondents were nulliparous adolescents.

Measures

•*Dependent variable.* We defined adolescent fertility as a live birth or a current pregnancy before age 20, regardless of whether the birth or pregnancy was wanted or unwanted, or occurred within or outside of marriage; this definition nearly mirrors that of adolescent birthrate, a widely used indicator of health and development.[7] To create this measure, respondents were asked several questions in Wave 3: "Are you currently pregnant?" "Have you ever been pregnant?" "How many children have you ever given birth to alive?" "In what month and year was your first child born?" and "How old were you when your child was born?" For respondents who had ever given birth or who were currently pregnant, we used their birth month and year and the interview date to determine if their first birth or current pregnancy occurred before age 20.

In the Wave 3 relationship module, respondents answered questions about up to three romantic or sexual relationships: their first, second and third or most recent. For each, women were asked "Have you ever been pregnant by this partner?" and "Have you ever had any children with this partner?" Responses provided the basis for linking adolescent fertility to specific relationships.

•*Independent variables.* We organized our independent variables into four blocks reflecting our conceptual model. Block 1 contains three variables. Respondent's age at the start of the relationship was calculated by subtracting the woman's birth month and year from the month and year in which the relationship started. Older partner was a dummy indicator based on the question, "Is that partner five or more years older than you?"; we chose five years as the cut-point because it seemed large enough to be socially meaningful during adolescence, but common enough to provide adequate statistical power for comparisons. Partner's school and work status was based on two questions: "When this relationship began, was that partner attending school?" and "When this relationship began, was that partner employed?" Because of the very high association between the two, we combined them into a single variable with four categories: in school and not employed, not in school and employed, in school and employed, and not in school and not employed.

The second block includes three variables related to financial motivations and transactions within the relationship. Measures of basic and auxiliary financial support were derived from questions about the extent to which a partner provided money or support for basic needs (e.g., food, simple clothing or a place to live), or gifts or money for things beyond basic needs; for each, response options were "very much," "somewhat" and "not at all" (coded 3, 2 and 1, respectively). A measure of financial motivations was derived from the question, "How important was the possibility of financial support in motivating you to get involved with this partner?"; response options were "very important," "somewhat important" and "not at all important" (coded 3, 2 and 1).

Block 3 contains two additional relationship process variables. Power disparity was a scale score (Cronbach's alpha, 0.76) derived from summing and averaging responses to

seven items from the Sexual Relationship Power Scale,[61] such as "During this relationship, this partner had more say than you did about important decisions that affected you"; response options were "very true," "somewhat true" and "not at all true" (coded 3, 2 and 1). Emotional investment was a scale score (Cronbach's alpha, 0.80) derived from summing and averaging answers to four questions about closeness, trust and love in the relationship (e.g., "During your relationship, how much did you trust this partner?") and one question about marital intentions (i.e., "Did you ever feel that you would like to get married to this partner?"). The response options for the four closeness, trust and love questions were "very much," "somewhat" and "not at all" (coded 3, 2 and 1); response options for the item about marital intentions were "no" and "yes," coded 1 and 3 for consistency with the other items in the scale. For all analyses beyond initial univariate descriptive statistics, we use standardized versions of the power disparity and emotional investment scales, so coefficients, odds ratios and adjusted odds ratios for these variables represent the estimated effects of a one-standard-deviation increase in each variable; we did this because neither scale has an established metric.

The final block consists of a dichotomous indicator of cohabitation with or marriage to the partner prior to age 20. We combined marriage and cohabitation into a single 0-or-1 indicator because marriage was very rare and almost never occurred in the absence of cohabitation.

Analyses

Analysis consisted of five stages. First, we conducted model-based imputation using the mi impute chained command in Stata 14 to fill in missing values of the independent and dependent variables using the approach of iteratively chained equations,[62,63] thereby creating 10 completed data sets. For all subsequent analyses, we used the mi estimate prefix, which automatically analyzed each of the 10 completed data sets separately and then aggregated the results, as suggested by Little and Rubin.[64] This approach yielded greater statistical power and less bias than the conventional approach of casewise deletion of missing values.[65,66]

Second, we obtained descriptive statistics on all nine independent variables plus adolescent fertility. Next, we examined associations among independent variables within each block via cross tabulation, correlation analysis, and linear and logistic regression models. Then, we examined bivariate associations between each independent variable in a given block and each independent variable in the subsequent block. This consisted of ordered logistic regression models for analyses predicting block 2 variables, linear regression models for analyses predicting block 3 variables and logistic regression models for analyses predicting the block 4 variable.

The final and most important stage consisted of a series of logistic regression models predicting the occurrence of adolescent pregnancy or birth within the relationship. We

began with a bivariate model for each of the nine independent variables. Next, we conducted a multivariate model with block 1 variables, and then sequentially added block 2, 3 and 4 variables to the models. This approach reflects our conceptualization of the relationship characteristics and processes driving adolescent fertility. For each independent variable, we interpret the coefficient and adjusted odds ratio from the first model containing that variable as the estimated total effect of that variable on the odds of adolescent pregnancy or birth occurring in the relationship, and the coefficients and adjusted odds ratios from subsequent models as estimated direct effects—that is, those that are not explained by the variables in subsequent blocks. To examine the sensitivity of the results of the full model to two specification issues, we conducted a second version of that model that also included relationship duration as an independent variable, as well as a third version that excluded relationships in which cohabitation or marriage had occurred by Wave 3. All analysis used robust standard errors to adjust for possible autocorrelation between multiple relationships reported by the same respondent.

RESULTS

Within the sample of relationships, 57 included a teenage birth and five a current teenage pregnancy; thus, adolescent fertility occurred in 17% of relationships (Table 1). On average, women were 17 years old when their relationship began. In 44% of relationships, the woman reported that her male partner was five or more years older. Most relationships were with men who, at the start of the relationship, were in school and not employed (50%) or employed and not in school (36%). In the vast majority of relationships, women reported receiving basic and auxiliary financial support (84% and 87%, respectively), as well as having some financial motivation for beginning the relationship (75%). The mean of the power disparity scale was just above the midpoint, whereas the mean of the emotional investment scale was further above the midpoint. Only 15% of relationships involved cohabitation or marriage.

The variables within each block were strongly associated with each another. In block 1, 64% of similar-age partners were in school and not employed, whereas only 32% of older partners were in the category (not shown); conversely, a greater proportion of older partners than of similar-age partners were employed and not attending school (50% vs. 24%, p<.001). In block 2, the correlation was 0.73 for basic and auxiliary financial support, 0.48 for basic financial support and financial motivation, and 0.36 for auxiliary financial support and financial motivation (p<.001 each). And in block 3, the correlation between power disparity and emotional investment was 0.30 (p<.001).

In analyses examining associations between block 1 and block 2 variables, a woman's greater age at the start of the relationship was positively associated with her

TABLE 1. Selected characteristics of relationships among female survey participants, Agomanya and Juapong, Ghana, 2013

Characteristic	%/mean (N=365)
Adolescent fertility in the relationship	
No	83.0
Yes	17.0
BLOCK 1	
Women's mean age at start of relationship (SD)	16.84 (1.98)
Partner's relative age	
Not ≥5 years older	56.0
≥5 years older	44.0
Partner's school/work status at start of relationship	
In school, not employed	49.8
Not in school, employed	35.5
In school, employed	7.8
Not in school, not employed	6.9
BLOCK 2	
Basic financial support	
Not at all	16.0
Somewhat	30.8
Very much	53.2
Auxiliary financial support	
Not at all	13.2
Somewhat	38.0
Very much	48.8
Financial motivation	
Not at all important	24.9
Somewhat important	29.6
Very important	45.5
BLOCK 3	
Mean power disparity (SD)	2.07 (0.53)
Mean emotional investment (SD)	2.54 (0.49)
BLOCK 4	
Cohabiting with or married to partner	
No	84.7
Yes	15.3

Notes: The plausible (and observed) values for the power disparity and emotional investment scales ranged from 1 to 3. SD=standard deviation.

partner's provision of basic and auxiliary financial support (odds ratios, 1.1–1.2; Table 2), but not with her financial motivation to begin the relationship. Compared with relationships in which women had a similar-age partner, those in which women had a partner five or more years older were more likely to involve partner's provision of basic and auxiliary financial support and the woman's being financially motivated to begin the relationship (1.8–2.0). And compared with starting a relationship with a partner who was in school and not employed, starting one with someone employed and not in school was positively associated with all three outcomes (2.1–2.9); starting a relationship with someone in school and employed was also positively associated with all three outcomes (2.0–2.1), but was only marginally significant.

Models examining block 3 variables and including block 1 and 2 variables showed that being in a relationship with an older partner was associated with higher average levels of power disparity (coefficient, 0.3), but not emotional investment. Compared with relationships in which partners provided no basic or auxiliary financial support, those in which partners provided such support were associated with higher levels of power disparity (0.3–1.0) and emotional investment (0.5–0.7). Likewise, compared with relationships for which women's financial motivations were not at all important for their starting, those for which such motivations were very important were associated with higher levels of power disparity and emotional investment (0.4 each). Involvement with a partner who was not in school or employed at the start of the relationship (rather than with one who was in school and not employed) was associated with lower emotional investment (−0.6).

In analyses including all other independent variables, relationships with older partners had nearly twice the odds of those with similar-age partners of involving cohabitation or marriage (odds ratio, 1.9). Likewise, relationships with partners who were not attending school at the start of the relationship were substantially more likely than those with partners who were attending school but unemployed to result in cohabitation or marriage (4.3–4.9). Respondents' own age at the start of the relationship was not associated with marriage or cohabitation. For each of the financial variables, the "very much" or "very important" category was positively associated with the relationship involving cohabitation or marriage. And finally, a higher power disparity score was positively associated with cohabitation or marriage (1.8); however, this was not the case for greater emotional investment.

In logistic regression models, the unadjusted odds of a birth or pregnancy were 84% higher in relationships with older partners than in those with similar-age partners (odds ratio, 1.8; Table 3); a woman's own age at the start of the relationship was negatively associated with the adolescent fertility (0.9), but only marginally significant. The odds of adolescent pregnancy or childbearing with partners who were employed but not in school at the start of the relationship were greater than with those who were in school and not employed, although this difference was not statistically significant; adolescent fertility, however, was positively associated with having a partner who was neither in school nor employed (3.1). Relationships involving provision of basic financial support were more likely than those involving none to result in adolescent pregnancy or childbearing (4.2–4.8); auxiliary financial support was not associated with fertility, and reporting that financial motivations were very important for entry into a relationship (rather than not at all important) was positively associated with the outcome (2.0), although only marginally significant. A one-standard-deviation increase in power disparity was associated with a 46% increase in the odds of adolescent fertility; emotional investment was not significantly associated with the outcome. Finally, cohabiting with or being married to a partner was strongly positively associated with adolescent fertility (6.7).

TABLE 2. Odds ratios or coefficients (and 95% confidence intervals) from bivariate analyses assessing associations between independent variables

Characteristic	Block 2			Block 3		Block 4
	Basic support (odds ratio)	Auxiliary support (odds ratio)	Financial motivation (odds ratio)	Power disparity (coefficient)	Emotional investment (coefficient)	Cohabitation/marriage (odds ratio)
BLOCK 1						
Woman's age at start of relationship	1.16 (1.05–1.30)**	1.12 (1.01–1.24)*	1.01 (0.91–1.12)	−0.02 (−0.07–0.04)	0.02 (−0.03–0.08)	1.07 (0.92–1.25)
Partner's relative age						
Not ≥5 years older (ref)	1.00	1.00	1.00	na	na	1.00
≥5 years older	1.84 (1.23–2.75)**	1.77 (1.19–2.64)**	1.98 (1.33–2.93)**	0.33 (0.13–0.54)**	−0.07 (−0.28–0.14)	1.94 (1.07–3.52)*
Partner's school/work status at start of relationship						
In school, not employed (ref)	1.00	1.00	1.00	na	na	1.00
Not in school, employed	2.86 (1.82–4.49)**	2.14 (1.38–3.33)**	2.42 (1.57–3.75)***	0.12 (−0.10–0.35)	−0.02 (−0.25–0.20)	4.94 (2.41–10.13)***
In school, employed	2.08 (0.92–4.70)†	2.06 (0.93–4.57)†	2.00 (0.93–4.30)†	0.13 (−0.27–0.54)	0.13 (−0.27–0.52)	1.66 (0.43–6.34)
Not in school, not employed	1.54 (0.66–3.61)	0.82 (0.37–1.82)	1.45 (0.67–3.15)	−0.29 (−0.71–0.13)	−0.61 (−1.03 to −0.20)**	4.34 (1.47–12.86)**
BLOCK 2						
Basic financial support						
Not at all (ref)	na	na	na	na	na	‡
Somewhat	na	na	na	0.31 (0.00–0.61)*	0.57 (0.26–0.88)***	1.00
Very much	na	na	na	0.73 (0.45–1.01)***	0.69 (0.40–0.97)***	2.42 (1.21–4.83)*
Auxiliary financial support						
Not at all (ref)	na	na	na	na	na	1.00
Somewhat	na	na	na	0.62 (0.31–0.94)***	0.51 (0.19–0.83)**	3.56 (0.77–15,49)
Very much	na	na	na	0.96 (0.66–1.27)***	0.74 (0.43–1.05)***	5.82 (1.34–25.17)*
Financial motivation						
Not at all important (ref)	na	na	na	na	na	1.00
Somewhat important	na	na	na	0.15 (−0.13–0.42)	0.03 (−0.25–0.31)	2.66 (0.92–7.72)†
Very important	na	na	na	0.44 (0.19–0.70)**	0.39 (0.14–0.64)**	4.85 (1.83–12.86)**
BLOCK 3						
Power disparity	na	na	na	na	na	1.81 (1.31–2.50)***
Emotional investment	na	na	na	na	na	0.80 (0.37–1.24)

*p<.05. **p<.01. ***p<.001. †p<0.10. ‡No respondent who answered "not at all" to the question about receiving basic financial support from the partner also reported that she was ever married to or had cohabited with that partner; the "not at all" category of basic financial support is therefore omitted from this logistic regression model, and the "somewhat" category becomes the reference group. *Notes:* Figures in columns 1, 2 and 3 are odds ratios from ordered logistic regression models predicting basic support, auxiliary support and financial motivation. Figures in columns 4 and 5 are coefficients from linear regression models predicting power disparity and emotional investment. Figures in column 6 are odds ratios from binary logistic regression models predicting cohabitation with or marriage to the partner. ref=reference group. na=not applicable.

Models 1–4 present the estimated total and direct effects of each independent variable on the odds of adolescent fertility. In model 1, a woman's own age at the start of the relationship was marginally negatively associated with adolescent fertility independent of the other block 1 variables (0.9), whereas partner's age disparity was not associated with the outcome. With respect to partners' school and employment status, only relationships involving partners who were neither attending school nor employed at the start of the relationship were significantly associated with adolescent fertility (2.9); this basic pattern persists across the other models, which suggests that to the extent that block 1 variables have effects on adolescent fertility, those effects are mostly not mediated by block 2–4 variables.

The estimated total effects of block 2 variables appear in model 2. Neither auxiliary financial support nor financial motivation were associated with adolescent fertility. However, relationships in which respondents reported receiving "some" or "very much" basic financial support were much more likely than those involving no basic financial support to result in adolescent fertility (6.7 and

6.0). These associations were only slightly reduced when block 3 and 4 variables were added to the analysis (3.4–6.4), which suggests that the effects of these variables are for the most part not explained by power disparity, emotional investment, or marriage and cohabitation.

The estimated total effects of block 3 variables appear in model 3. Emotional investment is not associated with adolescent fertility; however, a one-standard-deviation increase in the power disparity score is associated with a 44% increase in the odds of adolescent fertility. This association is diminished and becomes marginally significant when cohabitation and marriage are added in model 4, which suggests that the effect of power disparity on adolescent fertility is partly explained by cohabitation and marriage. This is supported by the large and significant total effect of cohabitation and marriage on adolescent fertility in that model (6.6). We ran versions of models 3 and 4 that included relationship duration as a control variable and that excluded the 59 relationships that involved cohabitation or marriage at Wave 3. Results were largely consistent with those of other models; details are available from the authors upon request.

TABLE 3. Odds ratios (and 95% confidence intervals) from regression models predicting adolescent fertility within a relationship

Characteristic	Bivariate	Model 1	Model 2	Model 3	Model 4
BLOCK 1					
Woman's age at start of relationship	0.89 (0.79–1.01)†	0.87 (0.76–1.00)†	0.85 (0.74–0.99)*	0.86 (0.73–1.00)†	0.85 (0.72–0.99)*
Partner's relative age					
Not ≥5 years older (ref)	1.00	1.00	1.00	1.00	1.00
≥5 years older	1.84 (1.05–3.21)*	1.53 (0.85–2.76)	1.42 (0.76–2.62)	1.29 (0.67–2.48)	1.28 (0.67–2.44)
Partner's school/work status at start of relationship					
In school, not employed (ref)	1.00	1.00	1.00	1.00	1.00
Not in school, employed	1.66 (0.90–3.07)	1.59 (0.81–3.14)	1.43 (0.71–2.84)	1.51 (0.73–3.13)	1.00 (0.45–2.25)
In school, employed	1.10 (0.35–3.50)	1.15 (0.35–3.70)	1.19 (0.36–3.94)	1.25 (0.37–4.22)	1.22 (0.37–4.03)
Not in school, not employed	3.05 (1.16–8.02)*	2.90 (1.08–7.79)*	3.55 (1.21–10.36)*	4.18 (1.32–13.24)*	2.93 (0.90–9.53)†
BLOCK 2					
Basic financial support					
Not at all (ref)	1.00	na	1.00	1.00	1.00
Somewhat	4.76 (1.35–16.87)*	na	6.70 (2.02–22.17)**	6.40 (2.01–20.38)**	6.31 (2.13–18.67)**
Very much	4.21 (1.23–14.43)*	na	5.99 (1.53–23.40)*	4.87 (1.29–18.41)*	3.41 (1.03–11.35)*
Auxiliary financial support					
Not at all (ref)	1.00	na	1.00	1.00	1.00
Somewhat	1.54 (0.59–4.06)	na	0.60 (0.21–1.75)	0.51 (0.17–1.53)	0.51 (0.20–1.33)
Very much	1.48 (0.57–3.81)	na	0.55 (0.16–1.88)	0.48 (0.14–1.64)	0.58 (0.21–1.65)
Financial motivation					
Not at all important (ref)	1.00	na	1.00	1.00	1.00
Somewhat important	1.73 (0.76–3.93)	na	1.16 (0.49–2.73)	1.15 (0.49–2.70)	0.99 (0.41–2.39)
Very important	2.01 (0.94–4.30)†	na	1.24 (0.54–2.85)	1.21 (0.53–2.73)	1.09 (0.47–2.56)
BLOCK 3					
Power disparity	1.46 (1.09–1.96)*	na	na	1.44 (1.03–2.01)*	1.35 (0.99–1.85)†
Emotional investment	1.11 (0.80–1.53)	na	na	1.01 (0.71–1.46)	0.82 (0.57–1.18)
BLOCK 4					
Cohabitation/marriage					
No (ref)	1.00	na	na	na	1.00
Yes	6.71 (3.48–12.93)***	na	na	na	6.57 (2.95–14.63)***

*p<.05. **p<.01. ***p<.001. †p<0.10. *Notes:* ref=reference group. na=not applicable.

DISCUSSION

The relationship factors found to be most strongly associated with adolescent fertility were partner's provision of basic financial support and cohabitation or marriage; we also found evidence that power disparity and partner's age are significant. However, there was little evidence that adolescent fertility is associated with partner's school and employment status at the start of the relationship, partner's provision of auxiliary financial support, woman's financial motivation to start the relationship or her emotional investment in the relationship. Finally, respondent's age at the start of the relationship—although not a relationship characteristic—was negatively associated with adolescent fertility. These findings provide support for the idea that adolescent fertility results from power differentials in relationships, as well as being indicative of family formation processes along an alternative path to adulthood. We suggest that when viewed within the context of a broader gender system, these mechanisms are not mutually exclusive.

Overall, we found little support for our hypotheses regarding the association between partner variables and adolescent fertility. Partner's relative age was significant in the bivariate analyses, but not the multivariate analyses that controlled for additional partner variables. The HIV literature suggests that age disparity may exacerbate gender-power dynamics due to economic asymmetries.[37–40] Our results suggest that with respect to adolescent fertility, the age gap between partners may be a poor proxy for capturing power disparity and the role of financial provision more directly. These findings are consistent with those from recent studies that found age disparity was not associated with incident HIV among young women in South Africa.[38,67,68] They are also consistent with results of a recent study in urban Kenya that found that the strong inverse association between the value of a financial transfer and condom use was the same for same-age and age-disparate relationships.[43]

The only block 1 variables associated with adolescent fertility in most multivariate models were woman's age at the start of the relationship and the dummy variable for having a partner who was neither in school nor employed. The association for woman's age may simply reflect the fact that relationships women begin at a younger age allow for more time during adolescence in which they can become pregnant or have a child. The elevated risk of fertility with partners neither in school nor employed was not what we

hypothesized. Our main intention for the partner's school and employment status variable was to contrast those who were employed but not in school with those who were in school but not employed. Those two categories accounted for more than 85% of the relationships in our sample, yet the comparison was not significant in bivariate or multivariate analyses. The not in school and not employed category was not of primary interest to us and contained fewer than 7% of the relationships in our sample. We do not have a compelling explanation for this group's association with fertility. It could simply be a type II error. However, if the association is replicated in other data sets, qualitative research could be used to shed light on the nature of these relationships and their association with fertility.

Our findings provide some support for the idea that power differentials and family formation processes help to explain adolescent fertility. In some of our multivariate analyses, adolescent fertility was positively associated with younger age, and with relationships characterized by power disparity and financial support. In addition, respondents who were younger at the start of the relationship were more likely to report a birth or current pregnancy, which suggests the potential importance of women's age rather than age differentials in generating risk. One could interpret these findings as suggesting that adolescent fertility in southeastern Ghana results from unequal relationship dynamics characterized by economic inequality and power disparities. While accounting for power disparity did not diminish the association between financial support and adolescent fertility, measures of power disparity, age disparity and financial support were all associated with each other in our analysis of covariates. Together these findings support the argument that adolescent fertility may be more likely for young women who are less able to assert their interests within relationships.

Yet, our multivariate results suggest that the association between power disparity and adolescent fertility may largely be explained by marriage and cohabitation. Our power disparity variable became only marginally significant when a measure of marriage and cohabitation was included in the model, yet the basic financial support variable remained highly significant. This raises an alternative interpretation: Adolescent fertility is part of a family formation process within relationships that adhere to the gender-traditional expectation that men provide for their partners. Within the Sub-Saharan African context and in Ghana specifically,[33] male provision of financial support is central to relationship formation and maintenance, and denotes love and commitment.[55,69] That neither of our variables capturing more transactional sexual relationships were significant also supports the assertion that adolescent fertility is occurring in more committed relationships. The fact that this pattern holds in bivariate and multivariate analysis suggests that it is not merely an artifact of the high correlations among the financial support and motivation variables.

If viewed within a broader gender system, the above mechanisms are rendered less contradictory. In patriarchal societies, men are expected to both provide for and hold authority over their households and, in Ghana, this extends to premarital relationships.[33,34] In turn, women are expected to provide reproductive labor. These highly traditional expectations will not be held by everyone and are certainly in flux as opportunities expand for women, belief systems are contested and men struggle to meet their provider expectations. However, the findings together suggest that fertility in these relationships may function alongside financial support and relationship control as an expression of such gendered expectations or in response to relationships in which men are able to uphold their end of the bargain.

Limitations

Several limitations of this study should be noted when interpreting the results. First, our classification of partners as either older or not older than the respondent is crude. We chose the five-year cut-point because we believe it balances the countervailing considerations of social meaningfulness and statistical power. However, the older-partner group was heterogeneous and included some relationships in which the partner was barely five years older than the respondent and potentially others in which the partner was much older. A different cut-point may have led to different conclusions. Plausibly, larger age differences may have been associated with greater increases in the risk of adolescent fertility; yet, those increases would have been difficult to detect statistically because of the rarity of very large age differences between partners.

Second, our questionnaire items assessing partners' school and employment status measured each at the start of the relationship. Of course, school and employment status are not static, and many partners may have changed over the course of the relationship. Likewise, we assessed other relationship processes, such as basic and auxiliary financial support, power disparity and emotional investment in ways that did not allow us to examine temporal variations. As a result, associations between these independent variables and adolescent fertility could be attributable, in part, to reverse causation: For example, a pregnancy or the birth of a child could cause a male partner to increase financial support. The fact that the one block 2 variable that clearly reflected circumstances at the start of the relationship—financial motivation—was only marginally significant in bivariate analyses and was not significant in multivariate models adds some credence to this reverse causation interpretation. Future research using a relationship history calendar to collect relationship-month data could resolve these ambiguities.[70] Nevertheless, the strong associations we observed suggest that adolescent fertility is intimately linked to other aspects of relationship solidification.

Another limitation is our use of self-reported data. Female youth tend to underreport sexual activity in

surveys.[71–75] Similar socially desirable response patterns could affect other aspects of our data. Respondents could have declined to report entire relationships or characterized their relationships in ways that conformed to collectively held models of social acceptability and respectability. Indeed, we chose to focus on the outcome of adolescent fertility rather than pregnancy because it is well known that abortion is underreported in surveys.[76,77] Very few women in our sample reported obtaining an abortion, which suggests that the reported pregnancies truthfully represent those that had already been or were being carried to term. The relationship factors associated with pregnancies ending in abortion could be quite different from those associated with pregnancies carried to term.

Additionally, our measure of power disparity—although widely used and psychometrically sound across a wide variety of populations and settings—may capture only certain aspects of power.[61,78] Gender is a multilevel organizing principle of social systems with macro-, interactional- and individual-level aspects.[23,24] Within a given social system, some aspects of power differentials between female and male partners may be so thoroughly normative and deeply institutionalized as to be nearly invisible to the members of that system. Thus, our finding that the association between power disparities and adolescent fertility is small and in some cases not statistically significant should not be taken to imply that gendered power relations play little or no role in adolescent fertility in Ghana. Rather, our results suggest only that those aspects of gendered power relations that are measured by the items we used from the Sexual Relationship Power Scale—which mostly involve direct efforts on the part of the male partner to monitor and control the respondent's behavior—are not strongly linked to fertility.

Finally, our results apply only to births to adolescents that occurred within relationships. A nontrivial proportion of adolescent births reported by our study participants (13%) did not correspond to any romantic or sexual relationship on which those participants provided information. Plausibly, many of those pregnancies may have resulted from rape, which our respondents may not have considered to fit within the category of romantic and sexual relationships covered in that module of our questionnaire. Future research could examine whether the health and social consequences of adolescent childbearing depend on the circumstances in which that childbearing occurs, and should not neglect births that occur because of rape or otherwise outside of romantic or ongoing sexual relationships.

Implications

In spite of these limitations, our main findings that adolescent fertility in southeastern Ghana is strongly associated with cohabitation and the provision of basic financial support by the partner have important implications for intervention strategies. Adolescent fertility in southeastern Ghana may be best understood as a step in a process of relationship solidification and family formation along a gendered pathway to adulthood. It should not be surprising that some young women end up on such a pathway. As much as adolescent women and their families may value education and aspire to establish themselves in a career in the formal sector of the economy, only a small proportion will in fact complete secondary school,[59] and many will end up struggling to earn a livelihood in poorly paid forms of employment and self-employment, mostly in the informal sector.[60] Under such circumstances, starting a family with a partner who has the financial means to provide for one's basic needs may be more appealing.[33] Nor is childbearing under those circumstances necessarily highly stigmatized. Qualitative data from these communities suggest that having the financial means to provide for a child—rather than formal marriage or being a certain age—is the main prerequisite for socially approved sexual activity within a relationship.[53]

If this view is correct, interventions that fail to address the paucity of educational and employment opportunities for young women may do little to reduce adolescent fertility in Ghana. In the long term, this will require economic growth, improvements in the labor market and investments in the educational system. More immediately, the most promising strategies may be those that address the gendered social system on a structural level, by making alternative pathways to adulthood more accessible to adolescent women. Conditional cash transfer programs that encourage families to keep their adolescent daughters enrolled in school for longer,[79,80] as well as interventions that help young out-of-school women to establish a career or livelihood,[81] may enable more young women to devote their late teens and early 20s to schooling and livelihood development, and to delay fertility and other aspects of family formation.

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RESUMEN

Contexto: *Se sabe poco acerca de los tipos de relación y procesos vinculados al embarazo y la maternidad en adolescentes en África subsahariana. Una mayor comprensión del rol que juegan las relaciones podría ayudar en el diseño de intervenciones para reducir la fecundidad adolescente.*

Métodos: *Se recolectaron datos sobre 365 relaciones románticas y sexuales de 298 mujeres adolescentes que participaron en una encuesta conducida en dos poblados en el sudeste de Ghana. Se utilizaron análisis bivariados y multivariados para examinar las asociaciones entre la fecundidad adolescente (i.e., embarazo y maternidad) dentro de una relación y variables independientes seleccionadas, como la diferencia de edad entre una mujer y su pareja, la provisión de apoyo financiero básico y auxiliar por parte de la pareja, la disparidad de poder dentro de la relación y la cohabitación o matrimonio.*

Resultados: *La fecundidad adolescente ocurrió en 17% de las relaciones. Entre las especificaciones del modelo, los factores más fuertes de predicción de la fecundidad adolescente fueron la provisión de apoyo financiero básico por parte de la pareja y la cohabitación o matrimonio. En algunos modelos, una mayor disparidad de poder se asoció con mayores probabilidades de fecundidad adolescente. Tener una relación con una pareja cinco o más años mayor se asoció con la fecundidad adolescente en análisis bivariados, pero no en los multivariados.*

Conclusións: *El embarazo y la maternidad adolescentes en el sudeste de Ghana pueden comprenderse mejor en tanto un aspecto de la consolidación de las relaciones y la formación de la familia a lo largo de un camino hacia la adultez*

condicionado por el género. Las intervenciones que ayudan a las mujeres jóvenes a evitar la dependencia en las relaciones sexuales como fuente de apoyo financiero podrían ayudar a reducir la fecundidad adolescente.

RÉSUMÉ

Contexte: *Les types de relation et les processus liés à la grossesse et à la maternité des adolescentes sont peu documentés en Afrique subsaharienne. Une meilleure compréhension du rôle joué par les relations pourrait être utile à la conception des interventions visant à réduire la fécondité adolescente.*

Méthodes: *Les données relatives à 365 relations romantiques et sexuelles ont été collectées auprès de 298 participantes adolescentes à une enquête menée dans deux villes du sud-est du Ghana. Les associations entre la fécondité adolescente (grossesse et maternité) au sein d'une relation et les variables indépendantes sélectionnées (telles que la différence d'âge entre la femme et son partenaire, l'apport par le partenaire d'un soutien financier de base et accessoire, la disparité de pouvoir au sein de la relation et la cohabitation ou le mariage) sont examinées par analyses bi- et multivariées.*

Résultats: *La fécondité adolescente intervient dans 17% des relations. Sur toutes les spécifications de modèle, les plus forts prédicteurs de fécondité adolescente sont l'apport par le partenaire d'un soutien financier de base et la cohabitation ou le mariage. Plus la disparité de pouvoir est grande, plus la probabilité de fécondité adolescente l'est aussi dans certains modèles. Le fait d'être en relation avec un partenaire plus âgé d'au moins cinq ans est associé à la fécondité adolescente dans les analyses bivariées mais pas dans celles multivariées.*

Conclusions: *La grossesse et la maternité à l'adolescence dans le sud-est du Ghana peuvent être le mieux comprises comme un aspect de solidification de la relation et de formation de la famille sur le parcours sexospécifique vers l'âge adulte. Les interventions qui aident les jeunes femmes à éviter les relations sexuelles en tant que source de soutien financier pourraient être utiles à la réduction de la fécondité adolescente.*

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