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Associations between spousal gender equity and recent unintended pregnancy among married adolescent girls and their husbands in rural Niger

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Abstract

This study in rural Niger examines if gender equity attitudes of married adolescent girls and their husbands are associated with recent unintended pregnancy (UIP) and ever-use of family planning (FP). Logistic regression models were used to calculate adjusted associations between husbands' and wives' equity (jointly and separately) and the two outcomes. UIP was less likely to be reported by adolescent girls with equitable husbands, controlling for wife's equity (adjusted odds ratio/aOR: 0.57, 95% confidence interval/CI: 0.41-0.80), and was more likely to be reported by equitable wives (aOR: 2.26, CI: 1.59-3.24). In stratified analyses, wife's equity was associated with a nearly three-fold likelihood of UIP in couples with inequitable husbands (aOR: 2.79, CI: 1.58-5.05). Ever having used FP was not associated with husbands' or wives' gender equity. Interventions targeting reproductive health outcomes for married adolescent girls should focus on spousal equity attitudes – improving wives' equity might be ineffective if husbands remain inequitable. (*Afr J Reprod Health* 2022; 26[12s]: 38-47).

Keywords: Adolescent, Niger, adolescent marriage, reproductive health, gender attitudes, spouses

Résumé

Cette étude dans les zones rurales du Niger examine si les attitudes en matière d'équité entre les sexes des adolescentes mariées et de leurs maris sont associées aux grossesses non désirées récentes (PUI) et à l'utilisation continue de la planification familiale (PF). Des modèles de régression logistique ont été utilisés pour calculer les associations ajustées entre l'équité des maris et des femmes (conjointement et séparément) et les deux résultats. La PNI était moins susceptible d'être signalée par les adolescentes dont le mari était équitable, en tenant compte de l'équité de l'épouse (rapport de cotes ajusté/aOR: 0,57, intervalle de confiance à 95 %/IC: 0,41-0,80), et était plus susceptible d'être signalée par les épouses équitables (aOR: 2,26, IC: 1,59-3,24). Dans les analyses stratifiées, l'équité entre les femmes était associée à une probabilité presque trois fois supérieure de PNI chez les couples avec des maris inéquitables (aOR: 2,79, IC: 1,58-5,05). Le fait d'avoir déjà utilisé la PF n'était pas associé à l'équité entre les sexes des maris ou des femmes. Les interventions ciblant les résultats en matière de santé reproductive pour les adolescentes mariées devraient se concentrer sur les attitudes d'équité conjugale - l'amélioration de l'équité des épouses pourrait être inefficace si les maris restent inéquitables. (*Afr J Reprod Health* 2022; 26[12s]: 38-47).

Mots-clés: Adolescent, Niger, mariage adolescent, santé reproductive, attitudes de genre, conjoints

Introduction

Adolescent marriage of girls aged 13 to 19 is a societal and public health challenge that limits the autonomy and health of girls around the world. In addition to violating girls' autonomy and limiting their education¹, adolescent marriage has important health consequences, such as increased risk of intimate partner violence, unintended pregnancy and

unmet need for contraception²⁻⁴. This study takes place among married adolescent girls and their husbands in rural Niger. Niger has the highest rate of adolescent marriage in the world, with three out of four girls marrying before their 18th birthday⁵. Family planning use is low among Nigerien adolescents⁵⁻⁷ possibly because many Nigerien women and girls wait to seek contraception until after the birth of their first child⁸. Niger ranked 187th

out of 188 countries in the United Nations' 2016 Human Development Index⁹, with extremely high gender inequality and poverty. Niger also holds the highest adolescent fertility rate in the world¹⁰. Unintended pregnancy among adolescents can also result from early marriage and low use of contraception. In one study in rural Niger, nearly one in three married adolescents aged 17-19 described their most recent birth as unintended¹¹. Given this high-need context, it is important for researchers to identify the factors that can improve reproductive health outcomes for married adolescents in Niger.

Gender equity attitudes are molded during early adolescence^{12,13} and have been shown to be associated with reproductive health outcomes in sub-Saharan Africa. For example, in Ethiopia, researchers found that women's gender equitable attitudes were associated with the power to decide to use current contraception¹⁴. In Nigeria, women's higher scores of individual attitudes supporting gender equity were also associated with increased adoption and continued use of contraception¹⁵. Gender equity attitudes can also influence men's use of family planning, although fewer studies examine this association; one multi-country study found that in rural Ethiopia and Kenya, men's gender equitable attitudes were associated with self-reported family planning use¹⁶. It is rare for studies of the association between gender equity attitudes and reproductive health to consider both partners' attitudes. One 2013 study of couple attitudes in Tanzania found that more gender equitable attitudes among wives' was positively associated with increased contraceptive use reported by wives, but husbands' gender equity attitudes did not have a similar association with contraceptive use reported by wives¹⁷.

Given incongruent findings between wives' and husbands' gender equity attitudes and reproductive health outcomes, it is important to consider the impact of these gender equity attitudes in combination, a topic that has not been studied in Niger. One study in Nigeria found that, in couples in which both the husband and wife endorsed wife beating, the odds of using contraception was 2.44 times higher compared to couples who both did not feel wife beating was justified, and in couples where either the husband or wife endorsed restrictions on the wife's activities, the woman was less likely to use modern contraception¹⁸. Spousal gender equity attitudes may also play an important role in

increasing the likelihood of unintended pregnancy. One 2014 review of research on individual women's empowerment and fertility found the literature to be inconclusive on the role between empowerment variables and unintended pregnancy¹⁹. Women's and girls' pregnancies are often a result of male partners' behavior; therefore, researchers need to examine how male partners' attitudes and discordance of partner attitudes could further complicate the relationship between women's empowerment and unintended pregnancy.

Many behavioral interventions to reduce negative reproductive health outcomes in married couples focus on increasing either the equitable attitudes of husbands or of wives, while few focus on the attitudes of both members of the couple at the same time²⁰. This study aims to fill a gap in the literature by examining the relationships between spousal gender equity attitudes and reproductive health outcomes among married adolescent girls and their husbands in Niger. As a couple-level study of a vulnerable adolescent population, our findings contribute to a wider understanding of the role that gender equity interventions can play in addressing pressing reproductive health needs for married adolescent girls across the world.

Methods

Study design

This study was conducted in the Dosso region of southwest Niger, bordering Nigeria and Benin. In Dosso, 90% percent of the 2.5 million inhabitants live in rural areas and there is a high prevalence of adolescent marriage⁵. Data were collected across 48 villages within the Dosso, Doutchi, and Loga districts at the baseline (pre-intervention) period of a cluster randomized control trial (RCT) evaluating a family planning promotion intervention targeting married adolescent girls and their husbands²¹. Villages within the three districts were randomly selected based on the following inclusion criteria: 1) rural (not a market town or city); 2) primarily Hausa or Zarma-speaking; 3) having at least 1000 inhabitants; and 4) located within 5 kilometers of a *centre de santé intégré* (CSI) or *case de santé* (CS) health facility. A protocol paper explaining the main study and intervention in detail has been published elsewhere²¹. For the purpose of this study focused on family planning use and unintended pregnancy,

adolescent wives who had not yet begun menarche were excluded from the sample.

Participants

From June 2016 to August 2016 married female adolescents ages 13-19 years old (N=1315) and their husbands (N=1314) were contacted to participate in the study. Of these, 1157 adolescent wives and 1156 husbands met inclusion criteria, consented to participate, and provided survey data. The target sample size for the main intervention study was calculated in order to provide 80% power to detect associations with an effect size of 2.0 greater odds of contraceptive method use²¹. Eligibility criteria for adolescent females' inclusion in the study included: 1) wife aged 13-19 years old; 2) married; 3) fluent in Hausa or Zarma; 4) residing in the village where recruitment is taking place with no plans to move away in next 18 months or plan to travel for more than 6 months during that period; 5) not currently sterilized; and 6) providing informed consent to participate in the study. Ethical approval was provided by Institutional Review Boards (IRBs) at the University of California San Diego (protocol number 160407S) and the Nigerien Ministry of Health (0112016CCNE).

Data collection

Surveys were conducted by trained research assistants from the Dosso region who could fluently read and speak French and fluently speak Hausa and/or Zarma. Research assistants visited the randomly selected households and conducted a Household Recruitment Screener to confirm eligibility. If the household was found not to include an eligible wife and husband, a randomly selected replacement was recruited in their place. Up to three visits were made to each of the selected participants and if they could not be reached after three attempts, no additional efforts were made. Surveys were administered in a private location of the participant's choosing in the village. The research assistant conducting the survey was gender-matched with the participant. Surveys were conducted in either Hausa (31%) or Zarma (69%), depending on participant's language preference. The survey took approximately 40-60 minutes to complete and was administered on pre-programmed tablets, using CommCare survey administration software²². The encrypted, de-identified data was uploaded via secure internet connection on a weekly basis.

Survey items for wives and husbands were closed-ended questions constructed to reflect the experiences, meanings and language of the target population, based on formative research findings, prior work of the project team, and existing reliable and validated instruments for men and women in low resource settings, including the Demographic and Health Survey (DHS)^{4,23,24}. The surveys were developed in English by the University of California, San Diego, translated into French, back translated into English to confirm content reliability, programmed in French, and verbally administered in Hausa or Zarma. Due to it being uncommon in the region for Hausa and Zarma-speaking research assistants to be able to read Hausa and Zarma, this translation protocol has been commonly utilized by researchers in Niger²¹.

Measures of interest

Adolescent wives and their husbands provided answers to questions about their gender equity attitudes, use of family planning, and intendedness of their most recent pregnancy, in addition to answering questions about related sociodemographic characteristics. Descriptions of the independent and dependent variables considered in this analysis are below.

Independent variable

Gender equity attitudes: To measure gender equity among husbands and wives, we first began with the Gender-Equitable Men (GEM) Scale, which has had a Cronbach's alpha of 0.81 in previous studies²⁵. All questions gave participants the following answer options: "Agree", "Disagree", "Decline to Answer", or "Don't Know." To measure equitable attitudes, responses of "Agree," were coded as 0 or inequitable, and responses of "Disagree" were coded as 1 or equitable. Following previous analyses of this data, responses of "Don't know" or "Decline to Answer" were also coded as 1 or equitable²⁶. The seven GEM questions are listed below:

1. A woman's most important role is to take care of the home and cook for the family.
2. A man should have the final word about decisions in the home.
3. There are times when a woman deserves to be beaten.
4. I think it is shameful when men engage in caring for children or other domestic work.

5. Giving baths to children, changing children's clothes, and feeding children are the mother's responsibility.
6. A woman should never question her husband's decisions even if she disagrees with them.
7. It is natural and right that men have more power than women do in the family.

Among participants who had no missing GEM answers, response values for all 7 questions were summed, resulting in a gender equity score ranging from 0 (completely inequitable) to 7 (completely equitable). After calculating gender equity scores of 0-7 for each participant, we determined the median gender equity values for husbands and wives.

We next assessed whether each individual's gender equity score was above or below the median gender equity score in their group. She or he was then assigned a binary value of "equitable" or "inequitable" based on that assessment. This method of defining equity within one's gender group of respondents is based on previous methods used to quantify variation in this highly homogenous sample²⁷.

Dependent variables

Recent unintended pregnancy: Adolescent wives were recorded as having a recent unintended pregnancy if they responded that, at the time of their most recent pregnancy, they did not want to have any more children or would have preferred to wait longer before becoming pregnant.

Ever used family planning: Wives were asked if they had ever tried to delay or space pregnancies in any way; if they said "yes," they were considered to have ever used family planning.

Possible covariates

We considered including as covariates several variables which were potentially related to the independent and dependent variables of interest, based on previous studies of this topic and the research team's familiarity with the rural Nigerien context²⁸⁻³⁰. These covariates included wife's age, wife's age at marriage, age difference between husband and wife, number of children, wife's literacy, district, and language spoken (a proxy measure for ethnic group membership).

Statistical analysis

In this study, we tested the separate and joint associations between adolescent wives' and their husbands' gender equity attitudes and two reproductive health outcomes, controlling for relevant covariates.

The associations we tested were: 1) The relationship between spousal gender equity attitudes and recent unintended pregnancy; and 2) The relationship between spousal gender equity attitudes and family planning use. The study was limited to the 954 married couples with a wife who had begun menarche and with no missing values for any of the variables included in this analysis.

All analyses for this study were performed using R version 3.5.2³¹. We first measured the distribution of demographic characteristics and spousal gender equity attitudes across family planning use and recent unintended pregnancy. We assessed if these distributions were statistically significant using two-sample t-tests and chi-squared tests of significance across the binary responses to the variables of family planning use and recent unintended pregnancy.

Next, we created multivariable logistic regression models to predict the impact of husband's and wife's gender equity on ever having used family planning and recent unintended pregnancy. We used stepwise backwards selection to choose a set of covariates for each outcome using the Akaike information criterion (AIC). Based on the backwards selection process, all odds ratios for family planning use were adjusted for literacy, language, and number of children. All odds ratios for recent unintended pregnancy and spousal gender equity concordance were adjusted for number of children, age of wife, and age of wife at marriage.

In our first set of regression models, we tested the separate and joint impacts of husbands' and wives' equity on our outcomes of interest. We first created separate regression models for each outcome that included only husband or wife equity, excluding the other spouse's equity. Next, we created joint regression models that included both husband and wife equity in the same model, to assess whether the inclusion of partner equity influenced the relationships between an individual's equity and the two outcomes. Finally, we stratified the couples by husband's and wife's equity, and assessed the impact of spousal equity across those strata for any outcome, which was significantly associated with spousal equity in the joint or separate regression models.

Results

Nine hundred and fifty-four (954) couples were included in this study. Table 1 depicts the sociodemographic characteristics of the study population. One in three husbands (34%) and wives (35%) were categorized as having inequitable gender

Table 1: Demographic information, family planning outcomes, and gender equity of married adolescent girls and their husbands in Niger (N=954 couples)

Characteristic	Total (N=954)		Ever Used Family Planning (n=179)			Recent Unintended Pregnancy (n=268)		
	n	%	n	%	p-value	n	%	p-value
Total	954	100	179	19%	-	268	28%	-
Independent Variables								
Husband's Equity								
<i>Inequitable</i>	321	34%	58	32%	0.76 ^a	101	38%	0.12 ^a
<i>Equitable</i>	633	66%	121	68%		167	62%	
Wife's Equity								
<i>Inequitable</i>	333	35%	62	35%	1.00 ^a	69	26%	<0.01 ^a
<i>Equitable</i>	621	65%	117	65%		199	74%	
Demographic Characteristics								
Wife's Age (years)								
<i>13-14</i>	31	3%	4	2%	<0.01 ^b	2	1%	<0.01 ^b
<i>15-17</i>	401	42%	48	27%		74	28%	
<i>18-19</i>	522	55%	127	71%		192	72%	
Wife's Age at Marriage (years)								
<i>10-12</i>	175	18%	48	27%	<0.01 ^b	61	23%	0.03 ^b
<i>13-14</i>	364	38%	77	43%		106	40%	
<i>15-17</i>	380	40%	53	30%		94	35%	
<i>18-19</i>	35	4%	1	1%		7	3%	
Age Difference Between Husband and Wife (years)								
<i>4 or fewer</i>	189	20%	33	18%	0.06 ^b	33	12%	0.01 ^b
<i>5-6</i>	235	25%	35	20%		72	27%	
<i>7-9</i>	235	25%	45	25%		70	26%	
<i>10 or more</i>	295	31%	66	37%		93	35%	
Number of Children								
<i>0</i>	369	39%	23	13%	<0.01 ^b	10	4%	<0.01 ^b
<i>1</i>	337	35%	67	37%		145	54%	
<i>2 or more</i>	248	26%	89	50%		113	42%	
Wife Literacy								
<i>Illiterate</i>	470	49%	67	37%	<0.01 ^a	125	47%	0.35 ^a
<i>Literate</i>	484	51%	112	63%		143	53%	
District								
<i>Dosso</i>	320	34%	52	29%	<0.01 ^a	98	37%	0.30 ^a
<i>Loga</i>	292	31%	77	43%		73	27%	
<i>Doutchi</i>	342	36%	50	28%		97	36%	
Language								
<i>Hausa</i>	270	28%	72	40%	<0.01 ^a	67	25%	0.18 ^a
<i>Zarma</i>	684	72%	107	60%		201	75%	

^a: chi-square test comparing categorical variable distribution across binary outcomes

^b: two-sample t-tests comparing continuous demographic variable across binary outcomes

attitudes. Fewer than one in five (19%) married adolescents reported having ever used family planning, and one in four (28%) described their most recent pregnancy as unintended. Study participants were mostly aged 18 or 19 (55%), married between age 13 to 17 (45%), and had husbands who were seven or more years older than they were (56%). Half of the adolescent wives (51%) were literate, and almost three out of four (72%) spoke Zarma.

Distributions of each independent and sociodemographic variable by the outcomes of ever having used family planning and reporting a recent unintended pregnancy are included in the rightmost six columns of Table 1. In bivariate analyses, neither husband's nor wife's equity was significantly associated with wives ever having used family planning, while only wife's equity was associated with recent unintended pregnancy. All demographic

Table 2: Separate and joint adjusted odds ratios and 95% confidence intervals of family planning use and unintended pregnancy as predicted by husbands' and wives' gender equity attitudes among married adolescent girls and their husbands in rural Niger (n=954)

Spousal Equity	Ever Used Family Planning ^a		Recent Unintended Pregnancy ^b	
	Separate ^c aOR (95% CI)	Joint ^d aOR (95% CI)	Separate ^c aOR (95% CI)	Joint ^d aOR (95% CI)
Husband's Equity				
<i>Inequitable</i>	reference	reference	reference	reference
<i>Equitable</i>	1.05 (0.73, 1.53)	1.04 (0.72, 1.52)	0.68* (0.49, 0.93)	0.57* (0.41, 0.80)
Wife's Equity				
<i>Inequitable</i>	reference	reference	reference	reference
<i>Equitable</i>	1.07 (0.75, 1.55)	1.07 (0.74, 1.56)	2.00* (1.42, 2.83)	2.26* (1.59, 3.24)

^a: Logistic regression models adjusted for literacy, language, and number of children
^b: Logistic regression models adjusted for number of children, age of wife, and age of wife at marriage
^c: Separate models did not also include spouse's gender equity
^d: Joint odds ratios were calculated using logistic regression models that included both husband's and wife's gender equity as predictor variables
*: p-value<0.05

Table 3: Adjusted odds ratios and 95% Confidence Intervals of unintended pregnancy stratified by spousal gender equity among married adolescent girls and their husbands in rural Niger (n=954)

Spousal Equity	Recent Unintended Pregnancy Stratified by Husband Equity (N=954)		Stratified by Wife Equity (N=954)	
	Inequitable (n=321) aOR (95% CI)	Equitable (n=633) aOR (95% CI)	Inequitable (n=333) aOR (95% CI)	Equitable (n=621) aOR (95% CI)
Husband Equity				
<i>Inequitable</i>	-	-	reference	reference
<i>Equitable</i>	-	-	0.68 (0.39, 1.19)	0.51* (0.33, 0.78)
Wife Equity				
<i>Inequitable</i>	reference	reference	-	-
<i>Equitable</i>	2.79* (1.58, 5.05)	2.00* (1.27, 3.21)	-	-

Logistic regression models adjusted for number of children, age of wife, and age of wife at marriage
*: p-value<0.05

variables except age differences between husbands and wives were significantly associated ($p \leq 0.05$) with differences in ever having used family planning, while wife's age, wife's age at marriage, age difference between husband and wife, and number of children were significantly associated with differences in reporting a recent unintended pregnancy.

Adjusted odds ratios for husbands' and wives' equity in separate and joint logistic regressions predicting ever having used family planning and recent unintended pregnancy are presented in Table 2. Neither husbands' nor wives' equity predicted wives ever having used family planning in separate or joint models. In contrast, husband's equity was associated with decreased odds of recent unintended pregnancy in a model which did not include wife's equity (adjusted Odds Ratio/aOR:

0.68, 95% Confidence Interval/CI: 0.49-0.93), while wife's equity was associated with increased odds of recent unintended pregnancy in a model excluding husband's equity (aOR: 2.00, CI: 1.42-2.83). These effects were more pronounced in a joint model that simultaneously accounted for both partners' equity in one regression equation (husband's equity aOR: 0.57, CI: 0.41-0.80; wife's equity aOR: 2.26, CI: 1.59-3.24).

Adjusted odds ratios of the associations between one spouse's gender equity and recent unintended pregnancy stratified by the other spouse's equity are presented in Table 3. Wife's equity was associated with increased odds of recent unintended pregnancy both among couples with husbands who were inequitable (aOR: 2.79, CI: 1.58-5.05) and among couples with husbands who were equitable (aOR: 2.00, CI: 1.27-3.21).

Husband's equity was only significantly associated with reduced odds of recent unintended pregnancy among couples where wives were also equitable (aOR: 0.51, CI: 0.33-0.78).

Discussion

Our study findings indicate that gender equity attitudes of married adolescent girls and their husbands in rural Niger were separately and jointly associated with recent unintended pregnancy and were not associated with ever having used family planning. Implications of these findings are discussed below.

The gender equity attitudes of both adolescent wives and their husbands in Niger were associated with differences in the likelihood of recent unintended pregnancy, in opposite directions, with wife's equity resulting in greater likelihood of recent unintended pregnancy while husband equity was associated with a decreased likelihood. These associations grew when controlling for partner's equity, showing that both spouses' equity attitudes matter to this outcome, and in couples where husbands were inequitable, equitable wives were three times more likely to report recent unintended pregnancy compared to inequitable wives whose attitudes were concordant with their husbands. This increased likelihood in unintended pregnancy among couples where husbands were inequitable and wives equitable could potentially be explained through the mediator of sexual violence, which has been found in Africa and Nepal to be associated with greater risk of unintended pregnancy^{32,33}. Additionally, research in sub-Saharan Africa has identified wives' gender equity in societies with gender-inequitable norms to be associated with increased risk of intimate partner violence³⁴.

One unexpected finding was the increased odds of recent unintended pregnancy among couples where the wife was equitable compared to couples with inequitable wives. This difference might be explained by the nature of the unintended pregnancy variable, the measurement of which has been debated by the research community³⁵⁻³⁷. In this survey, unintended pregnancy was self-reported by adolescent wives and indicated their lack of satisfaction with the timing of their most recent pregnancy. More research should be done on how adolescent wives perceive pregnancy intendedness –

it is possible that adolescent wives who hold gender equitable attitudes may be more likely to be dissatisfied with a gender inequitable husband or their lack of access to contraceptives and may be more likely to describe a pregnancy as unintended, while adolescent wives holding inequitable attitudes may not consider their individual desires to be relevant in determining a pregnancy's intendedness. This possibility is supported by qualitative research on pregnancy intendedness which highlights the influence of male partners on pregnancy intendedness^{35,37}.

Contrary to other studies on gender equity and family planning in Sub-Saharan Africa¹⁴⁻¹⁷, we did not find any associations between husbands' or wives' equity and wives ever having used family planning. One possible explanation for this might be the low (less than 20%) usage of family planning in this sample – the study may not have been sufficiently powered to detect differences in family planning use. The wives in our study were all adolescents and most had one or no children. Their age and parity may have limited their decision-making power and increased societal pressure on them to not use family planning prior to giving birth to more children. Another factor which may have restricted family planning access regardless of husbands' or wives' equity is the rural nature of our study location – this external factor may have reduced family planning access even for couples who might have chosen to use it if they had access. Further studies should be done to assess the impact that contraceptive access and social norms play on individual use of family planning among married adolescents in Niger.

Although our findings provide insight to the impacts of spousal equity on reproductive health in Niger, important study limitations merit attention. As a cross-sectional survey, we are unable to establish a temporal relationship between the proposed predictors and outcomes and can only measure a bidirectional association. Additionally, the data is all self-reported and is thus subject to recall bias from participants. This is an issue that warrants further study, given our findings. Another limitation was the language of survey administration – both Hausa and Zarma are predominantly oral languages, so the survey was written in French and translated orally into local languages by research assistants. It is possible that the wording of the

gender equity measures was not identical across surveys, and the interpretation of the items may have been slightly different across languages. This limitation was mitigated through pre-administration training for all research assistants and careful vetting of the French survey items to make sure they could be consistently translated into local languages.

This study also had several strengths. Married adolescent girls around the world are vulnerable to reproductive coercion from their partners and poor reproductive outcomes. This study makes use of dyadic data from adolescent wives and their husbands. It is rare for studies to be able to compare exact gender equity items across partners on such a large scale. By studying a sample of married adolescents in rural Francophone Niger, this research provides a novel contribution on spousal gender equity and its associated reproductive health outcomes to the literature on this vulnerable population. A final strength of this study is the use of a representative sample of the geographic area covered – the results are therefore generalizable to married adolescent girls and their husbands in the Dosso region of Niger and can inform greater understanding about married adolescent girls and their husbands in other rural settings that are culturally or geographically similar to the study catchment area.

Future interventions targeting reproductive health outcomes for married adolescent girls should work to engage husbands and change their gender equity attitudes. Our findings suggest that gender equity and family planning interventions which target only adolescent wives may not be able to change reproductive health outcomes if husbands remain inequitable and unsupportive of their adolescent wives' reproductive health and rights. When trying to improve reproductive health outcomes for married adolescent girls, programs and policy makers need to consider the contexts within which they live, and who they are married to – couple- and societal-level interventions may be key in changing opportunities and improving reproductive health for this population.

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