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Child marriage prevention in Amhara Region, Ethiopia: Association of communication exposure and social influence with parents/guardians' knowledge and attitudes

Anastasia J. Gage*

Department of Global Health Systems and Development, Tulane University, 1440 Canal Street, Suite 2200 TB-46, New Orleans, LA 70112, USA

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ABSTRACT

Despite increasing international attention to child marriage and its negative health and social consequences, little is known about the knowledge and beliefs of individuals who are in control of negotiating children's marriages and of the social context in which these individuals function. Using data from a 2007 cross-sectional household survey and multilevel logistic regression models, this paper examined the associations of communication exposure and measures of social influence with knowledge of marriage legislation, perceptions that marriage before age 18 was "too early", and beliefs in daughters' rights to individual marriage choice among parents/guardians in Amhara Region, Ethiopia. The study found that mass media and interpersonal communication exposure were positively associated with all outcomes. The influence of communication exposure on knowledge of the legal minimum age at marriage and the perception that marriage before 18 was "too early" varied significantly across communities. Community pressure to stop child marriages and awareness of marriage law enforcement were positively associated with endorsing daughters' rights to choose their marriage age and partner. Perceived social norms regarding early marriage, normative beliefs and perceived benefits of delayed marriage were at least as important as communication exposure for endorsing daughters' rights to marriage choice. Gender and education differences were detected. The findings imply that child marriage-prevention programs should diversify information channels, reinforce perceived advantages of delayed marriage, and adopt a social influence perspective.

Introduction

Although child marriage is declining worldwide, an estimated one-third of girls in developing countries, excluding China are married or in union before age 18; in some countries, more than a quarter of girls under age 15 are also married (United Nations Children's Fund, 2011). Factors underlying the practice include cultural norms, poverty, limited economic and educational opportunities, and parental concerns with safeguarding their daughters' virginity. Child marriage is most common in Southern Asia and sub-Saharan Africa. In 2005, half of Ethiopian women aged 20–24 were child brides and with a median age at first marriage of 15.2 in this age group, Amhara Region had the highest rate of child marriage (Central Statistical Agency & ORC Macro, 2006). Girls who marry before 18 have increased risks of school dropout, gender-based violence, social isolation, poverty, non-use of contraception, high fertility, short birth intervals, unintended pregnancy, reproductive morbidities including obstetric fistulae, maternal mortality, poor mental health (Le Strat, Dubertret, & Le Foll, 2011), sexually-transmitted infections, and HIV/AIDS (Clark, Bruce, & Dude, 2006; Khan, Bhutta, Munim, & Bhutta, 2009; Nour, 2006, 2009; Raj, Saggurti, Balaiah, & Silverman, 2009). Children of adolescent mothers also face increased risk of prematurity, malnutrition, and mortality (Chen, Wen, Fleming, Yang, & Walker, 2008; Raj et al., 2010).

International concern has led to numerous interventions to address child marriage, including mass communication, community mobilization, engaging traditional and religious leaders, enforcing and raising awareness of marriage legislation, life-skills training, cash incentives for delaying children's marriages, and expanding socioeconomic and educational opportunities for girls (International Center for Research on Women, 2007). Because most child marriages are family-arranged (Erulkar & Muthengi, 2009), many programs target people in position of power over children and adolescents, especially parents, guardians, and community members. Despite extensive research on the influence of health

* Fax: +1 504 988 3653.
E-mail addresses: agage11961@aol.com, agage@tulane.edu.

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communication and social influence on health outcomes (Babalola et al., 2006; Bertrand, O'Reilly, Denison, Anhang, & Sweat, 2006; Shefner-Rogers & Sood, 2004; Van Rossem & Meekers, 2007), little is known about the influence of communication exposure, community mobilization and religious leader engagement on child marriage prevention.

Diffusion of innovations theory provides a useful framework for understanding social change in marriage processes. Rogers (2003, p. 5) defined diffusion as "the process in which an innovation is communicated through certain channels over time among the members of a social system" and that alters its structure and functions. An innovation is "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (Rogers, 2003, p. 12). Diffusion reflects an individual-level decision-making process that consists of five stages: (1) knowledge about the innovation; (2) forming a favorable or unfavorable attitude toward the innovation; (3) taking steps that lead to adopting or rejecting the innovation; (4) implementation; and (5) confirmation, which may involve integrating the innovation into lifestyle (or discontinuation) (Rogers, 2003).

Mass media and interpersonal communication play an important role in the diffusion process. Communication may affect beliefs about early marriage, which social groups oppose or support the practice, and self-efficacy in delaying children's marriage until age 18. Communication on early marriage prevention in Ethiopia has included radio serial drama such as "*Dhimbiibbaa*" (Getting the Best out of Life), which addressed early marriage, marriage by abduction, women's empowerment, girls' education, and health (Ryerson, 2008). In the Community–Government Partnership Program (CGPP) and the Ethiopia Family Planning and Reproductive Health Project (EFPRHP), which were implemented in Amhara Region from 2002 to 2007, communication activities involved house-to-house visits by School Development Agents (SDAs) and Community-based Reproductive Health Agents (CBRHAs) to advocate for delayed marriage from the perspective of girls' education (Gurevich & Gero, 2005) and reproductive health (Pathfinder International, 2008), respectively; local campaigns; community conversations (Erulkar & Muthengi, 2009); school-based peer education; and public forums with traditional leaders to discuss the negative consequences of early marriage and childbearing (Pathfinder International, 2008).

Frank, Zhao, and Borman (2004) applied the concept of social capital (Coleman, 1988)—i.e., resources generated through interpersonal relationships and connections in social networks, and shared norms and values that facilitate cooperation among group members for mutual gain—to the diffusion of innovations framework. They argued that community members may apply social pressure on each other by sanctioning the failure to conform and thus influence individuals' perceptions regarding the social and moral permissibility of innovations. Hence, social influence – defined as the effect that people have upon the beliefs and behaviors of others (Lewis, DeVellis, & Sleath, 2002)—is pertinent to understanding change in marriage practices. Social influence can occur through personal interaction, communication or observation of influential others (Lindstrom & Muñoz-Franco, 2005) and can range from direct advice to more indirect influences, whereby individuals change their marriage-related attitudes or behavior to adhere to perceived marriage norms, whether accurate or not. This underlying desire to identify with a particular social group is captured by Henrich's (2001, p. 992) concept of "conformist transmission". Hamblin, Miller, and Saxton (1979, p. 809) added that social learning affects the diffusion process because people may make decisions "on the basis of the observed or talked about experiences of others".

Diffusion of innovations theory highlights the role of opinion leader approval in giving new ideas credibility (Rogers, 2003). The CGPP targeted Girls' Advisory Committees, SDAs, and teachers (Gurevich & Gero, 2005) and the EFPRHP, religious and traditional leaders (Pathfinder International, 2008) as key community actors for encouraging social norms supportive of delayed marriage. CBRHAs served as change aides. Social network studies emphasize that individuals tend to give greater weight to the opinions of those closest to them (e.g., family and friends) than to other network members and mass media when deciding to adopt an innovation (Laesthaeghe & Neels, 2002).

The relative advantage of an innovation over previous practices affects its rate of diffusion (Rogers, 2003). This suggests that individuals undertake cost–benefit analyses when choosing among alternative behaviors (Henrich, 2001). High socioeconomic position, education, urban residence, network connectedness, relative position in a social network, self-confidence, and demographic characteristics can modify the diffusion process by influencing an individual's perception of an innovation's costs and benefits, openness to novel information, and the timing of behavior change (Henrich, 2001; Wejnert, 2002). Within culturally homogenous groups, low socioeconomic position substantially slows the innovation-adoption process (Wejnert, 2002).

Ethiopia's Revised Family Code of 2000 established the legal minimum age at marriage (LMAM) at 18 years and required that both spouses give free and full consent. The New Criminal Code of 2005 imposed a maximum prison sentence of 3 years for marrying a girl aged 13–17 years and a minimum of 7 years if she is younger than 13. The Code stipulated further that persons solemnizing child marriages with full knowledge of the facts, family members and witnesses could receive maximum prison sentences of 3 years or maximum fines of Birr 5000 (about $280) (Teshome, 2005).

This paper aims to explore how exposure to communication about early marriage prevention and social influence were associated with knowledge of marriage legislation and attitudes favorable to delayed marriage among parents/guardians in Amhara Region. Three main questions were addressed: (1) How did mass media and interpersonal communication exposure influence knowledge, beliefs, and attitudes related to child marriage prevention and did this vary across communities? (2) Were parents/guardians' marriage-related beliefs and attitudes subject to social influence? (3) Did this vary by gender?

Methods

The data come from a cross-sectional household survey designed to document the coverage of early marriage-prevention activities conducted by the CGPP and EFPRHP in Amhara Region. The survey employed a three-stage cluster sampling design. First, all woredas (i.e., districts) were divided into three groups reflecting the type of early marriage-prevention activities: (a) community- and school-based; (b) school-based only; (c) no CGPP or EFPRHP activities. The third group comprised "non-program areas". Within each group, 6 woredas were randomly selected. At the second stage, 3 urban and 3 rural kebeles (i.e., communities) were selected per woreda with probability of selection proportional to size. Third, 50 households were randomly selected per urban kebele and 30 households per rural kebele based on household listings compiled for the 2007 census. The survey was conducted in July and August 2007.

One eligible adolescent (female aged 10–19 and male aged 15–24) and one co-resident parent/guardian per household were randomly selected for interview. Ninety-five percent of the 4894 identified co-resident parents/guardians were successfully interviewed. All questionnaires were translated into Amharic and back-translated into English. Ethical approval of the study was granted by the Tulane Human Research Protection Program, Institutional Review Board and the Ethiopian Public Health Association. Written

and witnessed consent were obtained from respondents prior to interview.

Measures

Knowledge outcomes included:

1. Knowledge of the LMAM: Respondents were coded 1 if they answered "18 years", and 0, otherwise.
2. Knowledge of legal consequences of early marriage: The value "1" was assigned if respondents could spontaneously identify 2 or more categories of individuals legally punishable for violating the LMAM, and "0", otherwise.

Ideational outcomes included:

3. Perception that marriage before age 18 is "too early": A dichotomous variable reflected whether the respondent perceived marriage before age 18 to occur "too early".
4. Belief in daughters' rights to choose their marriage age: This binary variable measured agreement with the statement: "A daughter has the right to freely choose when (at what age) she wants to marry."
5. Belief in daughters' rights to choose their marriage partners: This binary variable measured agreement with the statement: "A daughter has the right to freely choose who she wants to marry".

Exposure to early marriage-prevention messages

All respondents were asked whether they recalled seeing/hearing early marriage-prevention messages during the last few months from specific print media (i.e., newspapers/magazines, posters, and brochures); non-print media (i.e., radio, television, film, video, satellite, drama, and theater); community events (i.e., coffee ceremonies and community meetings); and interpersonal channels (i.e., teacher, religious leader, peer educator, health worker, girls clubs, women's association, CBRHA, health extension worker, and neighbors/friends/relatives). Mass media and interpersonal communication exposure measured the reported number of print/non-print media and interpersonal channels, respectively.

Social influence

Five proxies for social influence were constructed. The first measured perceived social norms: whether parents/guardians thought most people in their communities approved of early marriage (approve versus disapprove/do not know). The second measured normative beliefs, that is, perceived approval of friends/family if the respondent advocated against early marriage ("they will support" versus "they will oppose"). Social pressure to prevent child marriage was assessed by a community variable constructed from the adolescent data set reflecting the percentage of girls aged 10–17 in the kebele who ever heard their formal engagement/marriage was being planned and who reported that community members contacted their families to discuss "stopping the marriage". Social coercion was measured using the percentage of parents/guardians in the kebele who knew any community member that was legally punished for involvement in early marriage. Community religious advocacy, reflecting the degree of engagement of religious leaders in early marriage prevention, was measured using the percentage of parents/guardians in the kebele who reported that a religious leader had ever advised them/their families against early marriage. Community variables were the averages of individual responses and consisted of three categories: low, medium, and high.

Perceived benefits of delayed marriage

Parents/guardians were asked: "What are the advantages/benefits of marrying early? What are the advantages/benefits of marrying late?" As 96 percent of respondents reported no benefits of marrying early, the study examined the reported number of benefits of marrying late.

Potential confounding variables

For all outcomes, control variables included: residence in program areas; age; education (none, primary incomplete, primary complete, secondary/higher); age at first marriage (12–14, 15–17, 18 years and older versus before age 12 years/unknown); sex; urban residence; employment last year; household ownership of a bank account, radio, and television (entered as separate variables); and religion. The regressions on ideational outcomes also controlled for religiosity, measured by the frequency of attending religious events (daily, weekly, and less often/never). The analysis did not control for ethnicity because 95 percent of parents/guardians were Amhara.

Analysis

The analysis was conducted using STATA 10.1. As individuals who knew marriage laws and had supportive attitudes toward delayed marriage may have self-selected to remember seeing/hearing early marriage-prevention messages or to seek out relevant information, there was reason to suspect that communication exposure might be an endogenous explanatory variable. However, this issue could not be examined using instrumental variable (IV) probit models due to the difficulty of finding strong instruments.

Multilevel analyses were performed using the generalized linear latent and mixed model (GLLAMM) command (see Rabe-Hesketh & Skrondal, 2008 for technical details) to account for the hierarchical structure of the data, with parents/guardians nested within kebeles (hereafter referred to as communities). Factors hypothesized to explain differences among parents/guardians were modeled at level 1 and explanatory factors for between-community variation, at level 2. The analyses were unweighted as sample selection procedures for parents/guardians did not result in regionally-representative data. Five multilevel models were run for each outcome: (1) an empty model; (2) a random intercept model; (3) a model with a random slope for mass media; (4) a model with a random slope for interpersonal communication; (5) a random slope model in which the effects of both types of communication exposure were allowed to vary across communities. The equation for the two-level random slope model was:

$$\log(\pi_{ij}/(1-\pi_{ij})) = \beta_0 + \beta_1 x_{1ij} + \beta_2 x_{2ij} + \beta_3 I_{ij} + \beta_4 H_{ij} + \beta_5 C_j + \mu_{oj} + \mu_{1j} x_{1ij} + \mu_2 x_{2ij}$$

where i and j were the level 1 and level 2 units, respectively; π_{ij} was the probability of an outcome for the ith individual in the jth community; the random slope for mass media exposure was $\beta_{1j} = \beta_1 + \mu_{1j}$ and for interpersonal communication exposure was $\beta_{2j} = \beta_2 + \mu_{2j}$; the other βs were fixed coefficients; I, H, and C were other individual, household, and community characteristics, respectively; and the community-level random component in the intercept was $\beta_{0j} = \beta_0 + \mu_{0j}$ where μ_{0j}, μ_{1j}, and μ_{2j} follow a bivariate normal distribution. For ease of interpretation, results were presented as odds ratios (OR) and 95% confidence intervals (CI).

For ideational outcomes, interaction terms were constructed to assess the significance of gender and education differences in the effects of selected variables. For all models, cross-level interaction terms were constructed between parents/guardians' age at first

marriage and social coercion. Model 5 was compared to each of the previous three models and a likelihood ratio (LR) test used to determine whether the effect of each type of communication exposure varied randomly across communities. Resulting *p*-values of the associated chi-square statistics were halved to obtain correct estimates because the alternative hypothesis is one-sided. Adaptive quadrature was used for all estimation.

Tolerance and variance inflation factors (VIF) suggested that multicollinearity was not of concern. The highest VIF obtained was 2.39 and the lowest tolerance was 0.42. In the present analysis, there were 120 communities and 4445 parents/guardians for each regression. Parents/guardians with missing data on variables of interest were excluded from the analyses. Significantly fewer excluded parents/guardians correctly identified the LMAM and lived in radio-owning households. More excluded parents/guardians were female, younger than age 30, had secondary or higher education, first married before age 12, and were Ethiopian Orthodox Christians (not shown).

Results

Sample characteristics

Socio-demographic characteristics of the sample are shown in Table 1. The mean age of parents/guardians was 44 years and over two-thirds were female. Two-thirds were uneducated and over 70 percent were employed. Almost 20 percent first married before 12 or at an unknown age. About a quarter resided in households that owned a bank account while about 65 percent and 16 percent reported household ownership of a radio and television, respectively. Three-quarters were Orthodox Christians and a third attended religious events daily. Non-Orthodox Christians were predominantly Muslim (96 percent) (not shown). Thirty-nine percent of parents/guardians resided in rural areas, nearly half in program areas, and roughly 30 percent in communities with high religious leader advocacy, social pressure, and awareness of marriage law enforcement.

Ninety-five percent of parents/guardians reported seeing/hearing messages discouraging child marriage from one or more communication channels. On average, parents/guardians were exposed to 2.7 (SD = 1.958) and 2.9 (SD = 0.084) mass media and interpersonal communication channels, respectively. Thirty-three percent of parents/guardians knew the LMAM was 18 years, 16 percent knew legal consequences of early marriage, and 42 percent considered marriages before age 18 to occur “too early.” Fewer parents/guardians believed daughters had the right to choose their marriage age than their marriage partners (67 versus 75 percent) (not shown).

Multilevel analyses

Tables 2 and 3 present the results of random slope models for knowledge and ideational outcomes, respectively. Both types of communication exposure had independent, positive and significant associations with the odds of knowing the LMAM and legal consequences of early marriage, considering marriage before age 18 to occur “too early”, and endorsing daughters’ rights to choose their marriage age and partners. The significant negative interaction term between mass media and interpersonal communication exposure in Table 2 suggests that at increasing levels of exposure to mass media communication there were diminishing returns to knowledge of the LMAM with each additional interpersonal communication channel (and vice versa).

To test whether there was variability across communities in the association between mass media and interpersonal communication

Table 1
Background characteristics of parents/guardians.

Characteristics	Percent/mean (*SD*)
Individual level	
No. of mass media channels	1.459 (*1.720*)
No. of interpersonal channels	2.727 (*1.953*)
Age	43.874 (*12.571*)
Education	
None[r]	67.0
Primary incomplete (PI)	11.5
Primary complete (PC)	4.2
Secondary+ (SEC)	17.3
Employment	
Unemployed[r]	27.4
Employed	72.6
Age at first marriage	
<12 or Unknown[r]	19.1
12–14	17.3
15–17	25.6
18+	38.0
Bank account	
No[r]	74.9
Yes	25.1
Radio	
No[r]	34.4
Yes	65.6
Television	
No[r]	83.8
Yes	16.2
Orthodox Christian	
No[r]	22.3
Yes	77.7
Religiosity	
Daily[r]	35.6
Weekly	46.5
Less often/never	17.9
Sex	
Male[r]	30.7
Female	69.3
Perceived social norms	
No	93.2
Yes	6.8
Normative beliefs	
No	11.1
Yes	88.9
No. of perceived benefits	1.937 (*1.105*)
Community level	
Program area	
No[r]	49.7
Yes	50.3
Residence	
Rural[r]	39.0
Urban	61.0
Religious leader advocacy	
Low[r]	34.1
Medium	35.8
High	30.1

(*continued on next page*)

Table 1 (*continued*)

Characteristics	Percent/mean (*SD*)
Social coercion	
Low[r]	32.6
Medium	35.3
High	32.1
Social pressure	
Low[r]	40.8
Medium	28.8
High	30.4
Total	100.0
N	4445

[r]Reference category.
SD: standard deviation.

exposure and each outcome, the LR test was used to compare each model presented to (a) a random intercept model (with the empty model yielding intraclass correlation coefficients of 0.162 and 0.147 for knowledge of the LMAM and legal consequences of early marriage, respectively, 0.123 for the belief that marriage before age 18 occurs too early, and 0.108 and 0.068 for the belief that daughters had the right to choose their marriage age and partner, respectively); (b) a model with a random slope for mass media only; and (c) a model with a random slope for interpersonal communication only. The results of these computations indicated that the associations of both mass media and communication exposure with the odds of knowing the LMAM varied across communities (Table 2). There was also variability across communities in the association between mass media and interpersonal communication exposure and the odds of considering marriage before age 18 to occur "too early" (Table 3). Random intercept models would have been more appropriate than random slope models for knowledge of the legal consequences of early marriage and belief in daughters' right to choose their marriage age and partners, as indicated by the LR test results from comparisons of random intercept and random slope models containing the same explanatory variables.

Perceived social norms and normative beliefs (i.e., perceived approval from family/friends) were significantly associated with each ideational outcome, after controlling for other factors (Table 3). For example, the odds of considering marriage before age 18 to occur "too early" and of believing that daughters had the right

Table 2
Results of two-level logit models of knowledge of the LMAM and legal consequences of early marriage with random slopes for mass media and interpersonal communication exposure.

	LMAM		Legal consequences	
	OR	95% CI	OR	95% CI
Individual level				
Mass media exposure	1.304***	(1.167, 1.456)	1.352***	(1.191, 1.536)
Interpersonal communication exposure	1.306***	(1.217, 1.401)	1.227***	(1.128, 1.335)
Age	0.998	(0.991, 1.005)	1.003	(0.994, 1.012)
Education				
PI	1.257	(0.993, 1.593)	1.406*	(1.047, 1.887)
PC	2.066***	(1.453, 2.936)	1.701*	(1.113, 2.598)
SEC	2.132***	(1.662, 2.734)	2.113***	(1.562, 2.858)
Employed	1.161	(0.969, 1.391)	1.381*	(1.077, 1.770)
Age at first marriage				
12–14	1.791*	(1.143, 2.805)	0.942	(0.484, 1.835)
15–17	1.317	(0.863, 2.009)	1.297	(0.721, 2.335)
18+	1.683**	(1.133, 2.500)	1.610	(0.940, 2.756)
Bank account	1.187*	(1.001, 1.407)	1.124	(0.911, 1.386)
Radio	1.082	(0.903, 1.296)	1.152	(0.904, 1.467)
Television	1.046	(0.832, 1.314)	1.087	(0.825, 1.432)
Orthodox Christian	0.789*	(0.632, 0.985)	0.963	(0.731, 1.268)
Female	0.673***	(0.552, 0.820)	0.643***	(0.505, 0.818)
Community level				
Program area	0.804	(0.578, 1.117)	0.557***	(0.397, 0.780)
Urban	0.959	(0.661, 1.393)	0.698	(0.485, 1.006)
Community religious advocacy				
Medium	0.986	(0.668, 1.456)	0.836	(0.556, 1.257)
High	0.979	(0.637, 1.505)	0.976	(0.636, 1.497)
Social coercion				
Medium	1.350	(0.756, 2.414)	0.655	(0.297, 1.445)
High	1.415	(0.769, 2.605)	0.860	(0.379, 1963)
Interaction terms				
Mass media*interpersonal	0.959***	(0.939, 0.979)	0.977	(0.954, 1.000)
Age at first marriage*social coercion				
12–14*Medium	0.543	(0.289, 1.020)	2.557	(0.980, 6.669)
12–14*High	0.504*	(0.269, 0.945)	1.727	(0.660, 4.514)

Table 2 (*continued*)

	LMAM		Legal consequences	
	OR	95% CI	OR	95% CI
15–17*Medium	0.630	(0.351, 1.132)	1.514	(0.633, 3.622)
15–17*High	0.613	(0.340, 1.104)	0.969	(0.397, 2.367)
18+*Medium	0.594	(0.350, 1.010)	1.721	(0.784, 3.779)
18+*High	0.594	(0.343, 1.029)	0.989	(0.436, 2.243)
Constant	−1.799***	(−2.152, −1.085)	−3.044***	(−4.024, −2.468)
Intercept variance (SE)	0.998 (0.242)		0.483 (0.193)	
Mass media slope variance (SE)	0.023 (0.010)		0.009 (0.011)	
Intercept-mass media slope covariance (SE)	−0.099 (0.039)		−0.026 (0.035)	
Interpersonal slope variance (SE)	0.033 (0.013)		0.002 (0.005)	
Intercept-interpersonal slope covariance (SE)	−0.014 (0.041)		0.016 (0.027)	
Interpersonal-mass media slope covariance (SE)	−0.020 (0.010)		−0.004 (0.008)	
Log likelihood	−2429.18		−1603.05	
LR test χ^2 (5 d.f.)[a]	32.03***		1.17	
LR test χ^2 (3 d.f.)[b]	16.14**		0.58	
LR test χ^2 (3 d.f.)[c]	22.91***		1.15	
No. of parents/guardians	4445			
No. of communities	120			

***$p < .001$; **$p < .01$; *$p < .05$.
[a] Comparison: random intercept model with same explanatory variables.
[b] Comparison: model with random coefficient for mass media only and same explanatory variables.
[c] Comparison: model with random coefficient for interpersonal communication only and same explanatory variables.

to choose their marriage partners were 0.686 and 0.637, respectively, for parents/guardians who believed that their communities approved of early marriage, compared to the odds for those who did not. The odds of considering marriage before age 18 to occur "too early" and of endorsing daughters' rights to choose their marriage age and partners were 1.836, 1.800, and 2.261 for parents/guardians with perceived support from family/friends, respectively, relative to the odds for those without.

Residence in communities with high versus low social pressure showed a strong positive association with the odds of believing in daughters' rights to choose their marriage age but showed no association with the other ideational outcomes (Table 3). The odds of

Table 3
Results of two-level logit models of ideational outcomes with random slopes for mass media and interpersonal communication exposure.

	Marriage before age 18 occurs too early		Daughter's right to choose marriage age		Daughter's right to choose marriage partner	
	OR	95% CI	OR	95% CI	OR	95% CI
Individual level						
Mass media exposure	1.089	(0.977, 1.215)	1.277***	(1.144, 1.426)	1.206**	(1.060, 1.371)
Interpersonal communication exposure	1.090**	(1.021, 1.163)	1.106***	(1.042, 1.173)	1.097**	(1.030, 1.167)
Program area	0.795	(0.606, 1.045)	0.825	(0.638, 1.067)	0.804	(0.650, 0.994)
Age	0.988***	(0.981, 0.994)	0.995	(0.989, 1.001)	0.998	(0.991, 1.005)
Education						
PI	1.291*	(1.038, 1.605)	1.300	(0.817, 2.070)	1.736*	(1.056, 2.854)
PC	1.539*	(1.099, 2.153)	1.355	(0.633, 2.902)	0.739	(0.303, 1.804)
SEC	1.848***	(1.456, 2.346)	1.652*	(1.061, 2.571)	2.672***	(1.599, 4.467)
Employed	1.032	(0.875, 1.216)	1.050	(0.890, 1.240)	1.089	(0.913, 1.300)
Age at first marriage						
12–14	1.081	(0.731, 1.598)	1.190	(0.823, 1.721)	0.959	(0.657, 1.400)
15–17	1.071	(0.742, 1.545)	1.082	(0.768, 1.523)	1.004	(0.704, 1.431)
18+	1.528*	(1.076, 2.170)	1.366	(0.975, 1.913)	1.438*	(1.004, 2.060)
Bank account	0.955	(0.811, 1.124)	0.913	(0.771, 1.080)	1.108	(0.921, 1.333)
Radio	1.148	(0.975, 1.352)	1.047	(0.890, 1.232)	1.172	(0.990, 1.389)
Television	0.958	(0.769, 1.193)	0.952	(0.753, 1.203)	1.185	(0.908, 1.544)
Orthodox Christian	1.129	(0.921, 1.384)	0.900	(0.729, 1.112)	0.812	(0.655, 1.007)
Religiosity						
Daily	0.985	(0.839, 1.155)	1.159	(0.984, 1.366)	1.177	(0.988, 1.402)
Less often/never	1.088	(0.892, 1.328)	0.844	(0.693, 1.027)	0.957	(0.777, 1.178)
Female	1.195	(0.711, 2.009)	1.816*	(1.143, 2.884)	1.866**	(1.170, 2.976)
Perceived social norms	0.686*	(0.510, 0.923)	0.698*	(0.529, 0.921)	0.637**	(0.477, 0.852)

(*continued on next page*)

Table 3 (*continued*)

	Marriage before age 18 occurs too early		Daughter's right to choose marriage age		Daughter's right to choose marriage partner	
	OR	95% CI	OR	95% CI	OR	95% CI
Normative beliefs	1.836**	(1.159, 2.909)	1.800**	(1.196, 2.709)	2.261***	(1.495, 3.418)
Perceived benefits	0.989	(0.925, 1.057)	1.147**	(1.052, 1.251)	1.139**	(1.040, 1.248)
Community level						
Program area	0.795	(0.606, 1.045)	0.825	(0.638, 1.067)	0.804	(0.650, 0.994)
Urban	1.189	(0.707, 2.001)	0.811	(0.612, 1.076)	0.890	(0.698, 1.136)
Community religious advocacy						
Medium	0.849	(0.609, 1.182)	0.977	(0.717, 1.333)	1.149	(0.890, 1.482)
High	0.953	(0.663, 1.369)	0.661*	(0.479, 0.911)	0.827	(0.633, 1.081)
Social pressure						
Medium	0.767	(0.549, 1.071)	1.019	(0.750, 1.387)	0.925	(0.719, 1.189)
High	0.912	(0.666, 1.248)	1.528**	(1.138, 2.050)	1.207	(0.946, 1.540)
Social coercion						
Medium	1.428	(0.895, 2.278)	1.611*	(1.049, 2.475)	1.718**	(1.136, 2.599)
High	1.136	(0.686, 1.880)	1.992**	(1.230, 3.226)	1.388	(0.883, 2.181)
Interaction terms						
Female*normative beliefs	0.875	(0.514, 1.488)	0.498**	(0.310, 0.801)	0.476**	(0.294, 0.771)
PI*perceived benefits	n.a.		0.875	(0.713, 1.074)	0.749**	(0.604, 0.928)
PC*perceived benefits	n.a.		0.907	(0.655, 1.256)	1.457	(0.927, 2.289)
SEC*perceived benefits	n.a.		0.861	(0.733, 1.012)	0.778**	(0.648, 0.934)
Mass media*interpersonal	0.999	(0.979, 1.020)	0.980	(0.959, 1.002)	0.991	(0.964, 1.018)
Age at marriage*social coercion						
12–14*Medium	0.649	(0.373, 1.129)	0.941	(0.552, 1.602)	0.949	(0.544, 1.657)
12–14*High	0.887	(0.503, 1.565)	0.701	(0.397, 1.237)	1.069	(0.595, 1.923)
15–17*Medium	0.692	(0.416, 1.151)	0.940	(0.579, 1.528)	0.768	(0.461, 1.280)
15–17*High	0.889	(0.524, 1.508)	0.798	(0.472, 1.351)	0.971	(0.566, 1.667)
18+*Medium	0.693	(0.434, 1.106)	0.738	(0.469, 1.162)	0.588*	(0.360, 0.958)
18+*High	1.105	(0.670, 1.821)	0.488**	(0.285, 0.807)	0.656	(0.387, 1.114)
Constant (SE)	−1.214** (0.394)		−0.377 (0.370)		−0.365 (0.369)	
Intercept variance (SE)	0.550 (0.146)		0.337 (0.118)		0.186 (0.099)	
Mass media slope variance (SE)	0.031 (0.013)		0.001 (0.004)		0.014 (0.014)	
Intercept-mass media slope covariance (SE)	−0.009 (0.033)		0.014 (0.024)		−0.024 (0.030)	
Interpersonal slope variance (SE)	0.033 (0.012)		0.013 (0.009)		0.011 (0.010)	
Intercept-interpersonal slope covariance (SE)	−0.055 (0.033)		−0.028 (0.039)		−0.014 (0.027)	
Interpersonal-mass media slope covariance (SE)	−0.022 (0.010)		−0.004 (0.006)		−0.004 (0.010)	
Log likelihood	−2736.890		−2613.50		−2321.02	
LR test χ^2 (5 d.f.)[a]	24.34***		3.66		3.56	
LR test χ^2 (3 d.f.)[b]	17.66***		3.62		1.93	
LR test χ^2 (3 d.f.)[c]	13.14**		0.52		1.79	
No. of parents/guardians	4445					
No. of communities	120					

***$p < .001$; **$p < .01$; *$p < .05$. n.a. Not applicable.

[a] Comparison: random intercept model with same explanatory variables.

[b] Comparison: model with random coefficient for mass media only and same explanatory variables.

[c] Comparison: model with random coefficient for interpersonal communication only and same explanatory variables.

believing in daughters' rights to choose their marriage partners were significantly higher for parents/guardians residing in communities with medium versus low levels of social coercion. Perceived benefits of delayed marriage were not associated with the odds of considering marriage before age 18 to occur "too early". However, the odds of believing in daughters' rights to choose their marriage age and partners were 1.147 and 1.139, respectively for each additional perceived benefit (Table 3), a statistically significant result.

Interaction terms indicated that normative beliefs had significantly weaker associations with the odds of endorsing daughters' rights to choose their marriage age and partner for women than men. Further, the association of perceived benefits with the odds of believing in daughters' rights to spouse choice differed by level of education, and was significantly lower among parents/guardians with incomplete primary or secondary/higher education than among those with no education. As none of the interaction terms involving urban residence were statistically significant, they were omitted from the regressions. The cross-level interactions terms indicated that the level of social coercion in the community influenced the association between age at first marriage and knowledge of the LMAM. The difference between parents/guardians who

married at ages 12–14 and those who married at younger or unknown ages was more strongly negative in communities with high versus low levels of social coercion. Similarly, the associations of age at marriage with the odds of believing in daughters' rights to choose their marriage age and partners were more strongly negative among parents/guardians who married at ages 18 years or older (relative to younger or unknown ages) in communities with high and medium versus low levels of social coercion, respectively.

To test the significance of the random intercept, the likelihood ratio test was applied by calculating the difference in the observed deviances between the random coefficient models presented here and ordinary logistic regression models with the same explanatory variables. A deviance difference of 328.60 was obtained for knowledge of the LMAM, 86.81 for knowledge of legal consequences of early marriage, 153.99 for belief that marriage before age 18 occurs too early, 99.34 for belief in daughters' rights to choose their marriage and 24.51 for belief in daughters' rights to choose their marriage partners. Halving the tail probability associated with the chi-squared distribution with six degrees of freedom (the difference in parameters between the two types of models) yielded $p < .001$ for all outcomes. These results implied that the differences between communities were statistically significant for all outcomes.

Other control variables were also of interest. Women had significantly lower odds than men of knowing marriage laws and higher odds of endorsing daughters' rights to marriage choice. Education was positively associated with the odds of knowing marriage laws and considering marriage before age 18 to occur "too early". Secondary/higher education (relative to no education) was also associated with increased odds of endorsing daughters' rights to marriage choice. Residence in program areas was negatively associated with the odds of knowing legal consequences of early marriage but not with other outcomes.

Discussion

This paper examined several steps that parents/guardians move through along the continuum of child marriage prevention, prior to behavior change. While it is generally believed that mass media is more effective in creating knowledge of a new idea and interpersonal channels in forming and changing attitudes toward the idea (Rogers, 2003), the analyses found that both types of communication were positively associated with all outcomes. These results support and advance previous literature demonstrating that mass media is effective in changing social norms and bringing about rapid declines in harmful behaviors such as smoking initiation over a short time span, with consistent messages from multiple sources as the key to success (e.g., Pierce, White, & Emery, 2012). To my knowledge, no previous studies have examined the roles of mass media and interpersonal communication as well as multi-channel exposure in fostering knowledge and attitudes conducive to early marriage prevention.

The associations of mass media and interpersonal communication exposure with knowledge of the LMAM and the belief that marriage before age 18 occurs "too early" were found to vary significantly across communities. There are several potential explanations for these findings. First, message content may have varied across communities, with some messages emphasizing negative consequences of child marriage and others human rights or legal sanctions. Second, communities may have varied in the prevalence of promissory marriage and in norms and values around early marriage. The wider the disparity between early marriage-prevention messages and those norms, the greater would be the perceived cost of behavior change, and the more likely would individuals be to resist the messages (Wejnert, 2002; Zaller, 1992).

The finding that personal attitudes were associated with individuals' perceptions of how much other members of their community approved of early marriage is consistent with previous literature suggesting that social norms are related to smoking, smoking cessation, and college drinking (Karasek, Ahem, & Galea, 2012; Labrie, Atkins, Neighbors, Mirza, & Larimer, 2012). The study also found that personal attitudes were associated with perceived approval of friends/family of involvement in advocacy against early marriage. These effects were significantly weaker for women than for men, a possible reflection of the prominent role played by older men in traditional marriage arrangements (often seen as "agreements between fathers"). To my knowledge, this is the first study to directly measure the influence of perceived social norms and normative beliefs on attitudes relevant to child marriage prevention. The results are congruent with literature showing that parent/peer perceived disapproval is significantly associated with adolescents' likelihood of smoking (Page, Piko, Balazs, & Struk, 2011). The accuracy of perceived social norms and normative beliefs is an important consideration because parents/guardians may have overestimated or underestimated the normative acceptability of early marriage in their communities or reported beliefs in the direction of the perceived views of the majority in order to fit in, even when those views were contrary to theirs.

The study did not find strong evidence that social pressure was associated with attitudes conducive to delayed marriage. Residence in communities with high pressure to stop early marriages and high awareness of marriage law enforcement was positively associated with only one outcome – agreement that daughters had the right to choose their marriage age. Families that stopped planned child marriages in response to social pressure may have provided a resource in terms of conformity to other community members. However, fear of sanctions may have led some individuals to report opinions consistent with delayed marriage.

Community religious advocacy, a measure of religious leader engagement in early marriage prevention, was not significantly associated with the odds of endorsing daughters' rights to marriage choice. A likely explanation for this finding is the lower tendency for social comparison and influence to occur when people are counseled individually. The finding that residence in communities with high religious leader advocacy was negatively associated with the probability of considering marriage before 18 to occur "too early" was contrary to expectations. Given their high degree of social credibility, it was assumed that religious leader engagement would propel effects in a direction consistent with child marriage-prevention goals. There are two possible caveats. First, the role of social communication depends partly on the extent to which those who communicate are predisposed to transmitting messages favorable toward or opposed to the desired outcomes (David, Capella, & Fischbein, 2006). Unfortunately, there were no data on message content. This is particularly important as it is sometimes argued that children aged 14 and younger may be universally considered "too young" to make safe and consensual marital and sexual transitions, but that 15–17 year olds may not be, depending on the circumstances (Dixon-Mueller, 2008). Second, there may have been a wider gap between personal age definitions of early marriage and the LMAM in places with high religious leader advocacy. Future research should consider these issues explicitly.

The results also indicated that the greater were the perceived benefits of delayed marriage, the higher were the odds of adopting attitudes conducive to child marriage prevention but that the association with beliefs in daughters' rights to choose their marriage partners depended on educational attainment. To fully interpret these findings, more information is needed on the direct and indirect costs of delayed marriage (such as the increased economic costs to parents of supporting children whose marriages were

delayed or the increased risk of premarital pregnancy in the absence of a corresponding rise in the age at first sex or contraceptive use), as well as on the relative weight assigned by individuals to those costs/benefits. The large proportion of parents/guardians reporting no advantages of early marriage was unexpected and could reflect social desirability bias or the desire to avoid legal sanctions.

A major limitation of this study was its cross-sectional design, which precluded causal inference. Readers are also cautioned that measures of social influence and communication exposure may be endogenous and their effects inflated. Tests for endogeneity could not be conducted as strong instruments could not be identified. Connecting the effect of communication exposure to specific prevention programs was difficult and should be approached with caution because multiple organizations disseminated early marriage-prevention messages throughout Amhara Region. Further, the high degree of correlation between communication channels and lack of data on recall of specific slogans prevented an estimation of the net impact of each channel. As the sample of parents/guardians was not regionally representative, the findings cannot be generalized to Amhara Region. Caution is warranted in interpreting contextual effects as kebeles are only rough approximations of neighborhoods. The study was also limited in its ability to capture community-level variation in outcomes. Furthermore, the significance of the random intercepts suggested that knowledge and ideational outcomes examined were determined by unmeasured factors (such as the quality of communication), the omission of which constituted a source of bias. A study design that included a comparison group would have been ideal but difficult to implement given the widespread dissemination of early marriage-prevention messages throughout the region. As time is a key element in the diffusion process, a prospective cohort study of marriage formation is necessary to assess behavioral change. Despite these limitations, this study contributes to knowledge of the role of mass media and interpersonal communication in fostering knowledge and attitudes favorable to delayed marriage and underscores the importance of understanding child marriage as a social norm.

Policy implications

One of the goals of "A World Fit for Children" is to "end harmful traditional or customary practices, such as early and forced marriage…, which violate the rights of women and children" (United Nations, 2002, p. 15). Although laws have been established in Ethiopia to protect children from child marriage, limited enforcement and public awareness of marriage laws and socio-cultural attitudes support the continuation of harmful traditional practices. As has been suggested for child protection from violence (Svevo-Cianci, Herczog, Krappmann, & Cook, 2011) and child marriage prevention in India (Ghosh, 2011), policy initiatives need to go beyond the legal framework to consider the social context of the practice. First, research and strategies are needed to identify and correct parental misperceptions about the degree to which community members support child marriage or its prevention. This could help create an environment in which child marriage prevention is seen as a common good and collective responsibility. Community mobilization to stop planned child marriages should be encouraged in order to foster public acceptance of the LMAM and girls' rights to individual choice in marriage. Such a "bottom-up" approach may promote community ownership of local child marriage surveillance and prevention efforts. Community religious advocacy should address the lower odds of knowing the LMAM among Orthodox Christians and encourage social acceptance of daughters' rights to choose their marriage age.

The findings also suggest that greater effort is needed to strengthen public understanding of marriage laws (especially among women) and acceptance of daughters' rights to marriage choice (especially among men). Furthermore, social communication about child marriage prevention and the benefits of delayed marriage should be a core component of any anti-child marriage policy, with messages distributed through multiple channels to help alter deeply-held beliefs surrounding child marriage. As some of the associations between communication exposure and marriage beliefs varied across communities, the uniqueness of each community needs to be understood in terms of cultural attitudes, socioeconomic conditions, community dynamics, and other factors that might affect the success of awareness-raising campaigns. The positive association between education and the ideational outcomes analyzed suggests that long-term strategies to address child marriage must include expanding access to secondary and higher education. There is also a need for continued dialogue between policy makers and community members to identify potential barriers to delayed marriage, including unintended consequences of prevention strategies, which may reverse the perceived benefits of marrying late.

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