



Original article

Adolescent Girls' Agency Significantly Correlates With Favorable Social Norms in Ethiopia—Implications for Improving Sexual and Reproductive Health of Young Adolescents

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Article history: Received May 21, 2018; Accepted December 11, 2018

Keywords: Adolescent girls; Social norms; Agency; Education; Marriage; Nutrition; Ethiopia



A B S T R A C T

Purpose: This study investigates the relationship between adolescent girls' agency and social norms regarding early marriage, girls' education, and nutrition in West Hararghe, Ethiopia.

Methods: We conducted a cross-sectional study involving adolescent girls aged between 13 and 17 years in 2016. A two-stage cluster sampling procedure was followed to identify eligible respondents at the household level. A total of 114 clusters in four districts and 30 households from each cluster were randomly selected. Data were collected using a structured and pretested questionnaire. The agency composite score was measured based on 21 previously validated items. Descriptive and injunctive norm composite scores regarding education, marriage, and nutrition were constructed based on context-relevant items. The weighted mean and standard errors were calculated for the agency and social norms composite scores. The relationship between girls' agency and descriptive and injunctive norms were examined using a multivariable linear regression model that accounted for a complex sample survey design.

Results: A total of 3,186 adolescent girls participated in this study. The multivariable linear regression analysis revealed that adolescent girls' agency score significantly and favorably associated with education ($\beta = .19, p < .001$), marriage ($\beta = .13, p < .01$), and nutrition ($\beta = .20, p < .01$) descriptive norms after adjusting for individual and household characteristics. Similarly, adolescent girls' agency was significantly and favorably associated with marriage ($\beta = .21, p < .001$) injunctive norms; however, positive injunctive norms around education ($\beta = .09, p > .05$) and nutrition ($\beta = .12, p > .05$) did not have a statistically significant association with girls' agency. The domains of agency scale related to the belief in women's health rights related to contraception use and the belief in women's right to refuse sex showed poor prosocial views.

Conclusions: Favorable descriptive and injunctive norms around marriage were significantly associated with greater adolescent girls' agency, which indicates the need to incorporate interventions that address social norms in efforts aimed to enhance adolescent girls' sexual and reproductive health status. Furthermore, attention should be given to monitor which domain of agency is improved by the interventions.

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IMPLICATIONS AND CONTRIBUTION

This study reveals a strong association between agency and social norms. An overall agency scale obscures deficiency in specific agency domains that are critical for improving adolescent girls' sexual and reproductive health. Thus, further developing a comprehensive agency scale that can address all domains of agency adequately is necessary to improve our understanding of adolescent girls' agency and improve the health and well-being of adolescent girls.

Conflicts of interest: The authors have no conflicts of interest to disclose.

Disclaimer: The publication of this article was made possible by the support of the Bill & Melinda Gates Foundation. The opinions or views expressed in this article are those of the authors and do not necessarily reflect the views of the Bill & Melinda Gates Foundation.

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Adolescent girls face a wide range of sexual and reproductive health needs and problems that remain unaddressed because of limited knowledge regarding individual, social, environmental, and structural factors [1–3]. Recently, more emphasis has been given to identifying and modifying social norms that drive gender inequalities [4]. Ensuring equal social, health, educational, and economic opportunities that ensure the well-being of girls is one of the Sustainable Development Goals [5]. Enhancing girls' agency, their ability to define goals, and act on them [6] is critical for the ability of adolescent girls to cope with the various inequalities that undermine their self-worth.

In Ethiopia, adolescent girls are generally believed to have lower agency than boys because of social norms that evidently favor boys [7,8]. Early marriage practices are predominantly enforced on adolescent girls with the intention of preserving girls' virginity until marriage and to prevent out of wedlock births [9]. Social norms related to nutrition favor boys, who receive priority in the quality and quantity of food. Social expectations in patriarchal societies also prioritize boys in education, especially in the pursuit of higher education. By diminishing their ability to make the right choices at the right time, these social norms (and others) are impediments to adolescent girls improving their sexual and reproductive health [4,10].

Many interventions aimed at enhancing adolescent girls' agency have been implemented without a complete understanding of the sociocultural contexts. These efforts have resulted in limited impact [4]. New laws to increase the legal age for marriage [11], providing equal access to free education for both boys and girls, and a wide range of nutritional interventions aimed at enhancing the agency of adolescent girls are hampered by the prevailing, deeply rooted social norms that continue to support older traditions [12]. Gender gaps in education continue to prevail after 15 years (2000–2014) of implementing an equal access education policy in Ethiopia. The net enrollment rate for primary education in 2014 was 90.1% for girls and 95.1% for boys [13].

Sustainable empowerment of adolescent girls will be a result of coordinated changes in their agency (the capacity of girls to take purposeful action, pursue goals, and be free from the threat of violence or retribution), the social environment that surrounds and conditions their choices, and the power relations through girls negotiate their well-being [14]. Understanding the relationship between girls' agency and the prevailing social norms is critical to enhancing their sexual and reproductive health. Social norms are unwritten rules and are commonly of two types—(1) injunctive norms reflect on perceived pressures to conform and avoid social sanctions and gain social approval; and (2) descriptive norms reflect the (perceived) prevalence of the focal behavior and the belief that an individual has regarding what others commonly do [15]. Norms are often internalized at an early age and influence the behavior of adolescents. When inequitable, these norms also reinforce the power imbalance that victimizes girls [16].

Adolescent girls in the age group 13–17 years are in a critical phase of their life. During this phase, girls are either supported to walk along a path that allows them to thrive or they will fall back on traditional roles that quash their capabilities, halt their aspirations, and increase their vulnerability to a variety of risks to their sexual and reproductive health [16,17]. The available data sources from low-income settings, including the Demographic and Health Surveys, do not address this age group sufficiently [18]. Systematic study of younger adolescents is required to better understand

what supports and holds back girls in this stage of life. The purpose of this study was to examine the relationship between adolescent girls' agency and the social norms that are related to marriage, nutrition, and education to elucidate the importance of social norms for improving sexual and reproductive health and the well-being of adolescent girls.

Methods

Study context/field site description

The study was conducted in the West Hararghe zone of the Oromia regional state in Ethiopia. The majority of the population in this area belongs to the Oromo ethnic group; they speak Affaan Oromo and follow Islam. Around 85% of the population live in rural areas and depend on agriculture for living. Every kebele, the smallest administrative unit in Ethiopia (in the study districts), has a primary school, which is within walking distance from the participants' home. Higher level schooling requires traveling outside the kebele, and in some cases, these schools are not within a daily commuting distance. The husband is often considered the head of the household. Husbands are expected to make all "important" decisions that involve substantial monetary commitments to a household.

Study design

This article draws on data from a baseline survey conducted as part of a large quasi-experimental study that aimed to test two combinations of individual-, community-, and structural-level intervention packages that were proposed to improve reproductive health, nutrition, and education outcomes of young adolescent girls in the Western Hararghe Zone, Oromia Region, Ethiopia. The baseline survey was carried out from May to August 2016.

Study participants

The study subjects were adolescent girls aged between 13 and 17 years who resided in four districts that were selected for the larger study in West Hararghe, namely Mesela, Chiro, Doba, and Boke. In the first stage, 114 clusters (development zones within a kebele, typically each kebele has three development zones) were selected using simple random sampling after obtaining a complete list of kebeles and their development zones in the selected districts from the respective district health office. In the second stage, a complete household listing in the selected clusters was prepared by the survey team to identify households with eligible adolescent girls. Thirty households with eligible adolescent girls were randomly selected using a computer-generated random number. If there were more than one eligible adolescent girls in the household, the elder was selected.

Data collection: tools, procedures, and data management

Data were collected using structured and pretested questionnaires that were first developed in English and then translated into the local language, Affaan Oromo. The data collection tool was developed based on initial formative research conducted to identify prevailing social norms in the study context. Interviewers and field supervisors were trained for 3 weeks on survey procedures, study tools, and related issues. A

pretest was done in a similar setting, not included in the main study, to test the appropriateness of the questions, language, flow, and comprehension of the questions by potential respondents. Adolescent girls were interviewed by trained interviewers at home. The Open Data Kit, an electronic data collection program, was used to collect the data and upload it on a secure server. The Open Data Kit program used a secured, centrally managed server.

The research protocol was approved by the Institutional Review Board of Addis Continental Institute of Public Health. Informed verbal consent was obtained from all study participants. For participants below the age of 15 years, additional parental/guardian-informed verbal consent was obtained. All interviews took place in a private setting to assure confidentiality.

Measurement

Each item was measured using a Likert scale and categorized into five coded groups: do not know as “0,” strongly unfavorable response as “1,” unfavorable response as “2,” favorable response as “3,” and strongly favorable response as “4.” “Refused” was treated as a missing response. The same Likert scale response options were used to construct scales throughout the study (agency and norms).

This study adapted questions from CARE’s WE-MEASR quantitative survey tool to construct the composite agency scale. The WE-MEASR tool consists of scales that measure women’s empowerment in areas related to sexual and reproductive health and is aligned with CARE’s theoretical framework for women’s empowerment, which entails changes in the domains of individual agency, relations, and structure. The tool was field tested in Malawi and has undergone various adaptations in several countries [19]. In this study, the agency scale considered five domains of girls’ empowerment that included belief in women’s right to refuse sex (one item), opposition to traditional male dominance (11 items), belief in women’s health rights (five items), self-efficacy to negotiate and communicate (two items), and girls’ ability to decide whom and when to marry (two items). The only new domain added on the WE-MEASR tool was the ability to decide on marriage. Summation of all items was used to create an agency score that ranged between 0 and 84. The agency scale showed an acceptable reliability measure Guttman’s Lambda-2 of .75. Guttman’s Lambda-2 is similar to Cronbach’s alpha but is assumed to be more robust than alpha for parallel measures of a composite scale. The various norm scores were calculated by considering relevant items, and for each of these calculations, a Guttman’s Lambda-2 reliability test was also done (Table 1).

Adolescent girls’ marital status was categorized as “ever married” if they were married/living together with their partner, widowed, divorced, or separated; marital status was otherwise classified as “never married.” Adolescent girl’s educational status was categorized as “never attended school,” primary school level (those who completed grade 1–8), and secondary school level (those who completed grades 9–12).

Household wealth quintile was calculated using principal component analysis. Items included in the principal component analysis were the source of drinking water, type of toilet facilities, household items available, type of fuel used for cooking, main material used for floor, roof, and walls, presence of windows, availability of a separate room for sleeping, ownership of transportation means, ownership of farmland, ownership of

cattle, and ownership of bank or microfinance savings account. Components with Eigenvalues >1 were used to construct the wealth index by adding the predicted value of each component. Quantile cut-off points were used to categorize households into five categories, lowest = 1 and highest = 5.

The Household Food Insecurity Access scale was used to assess the food security status of households. The Household Food Insecurity Access scale is based on 18 questions that categorize households into four groups: “food secure,” “mildly food insecure access,” “moderately food insecure access,” and “severely food insecure access.” We recategorized individuals to the “food secure” group if the household was “food secure,” and the other three categories as “food insecure.”

Data analysis

Sampling weights were applied during analysis to ensure the sample represents the population from which it was drawn. The weighted mean and standard errors (SEs) were calculated for agency and the six norms scales separately. The frequency of each item in the agency and the six norm scores were examined (data not presented). The relationship between girls’ agency with selected adolescent girls’ characteristics (age, educational status, marital status, religion, and parental education) and household characteristics (wealth quintile, radio ownership, and food security status; model 1) and adding to these the descriptive and injunctive norms as independent variables (model 2), we examined the associations using a multivariable linear regression model, taking the complex sample survey design into account. The assumptions for the linear regression model were checked and included multicollinearity, constant variance, and normality of residuals. Stata version 14 statistical software (StataCorp., Stata Statistical Software: Release 14. College Station, TX) was used for analyses.

Ethical considerations

The study protocol was reviewed and approved by the Ethical Review Board of the Addis Continental Institute of Public Health. Informed consent was obtained from all participants and their guardians after explaining the purpose of the study. Participants were informed about their rights to refuse participation and/or withdraw their consent at any time. All interviews took place in private settings.

Results

A total of 3,420 adolescent girls were expected to participate in the study; 3,186 adolescent girls actually participated in this study. The nonresponse was either due to unavailability of eligible respondents at home on the data collection days (182, 5.32%) or refusal (52, 1.52%). The mean (\pm standard deviation) age of adolescent girls was 14.87 (\pm 1.36) years, 10.77% of girls were ever married, 18.58% never attended school, and 89.11% had no personal income. The majority of adolescent girls’ fathers (66.26%) and mothers (83.21%) never attended school. Most of the girls live in food insecure households (80.13%). Overall, 41.1% of the adolescent girls belonged in the lower two wealth quintile categories, and 67.58% of the households in which adolescent girls lived had no radio (Table 2).

The weighted mean (\pm SE) agency score was 48.2 (\pm .37), range 0–84. The weighted mean (\pm SE) for favorable descriptive norms was 17.9 (\pm .15) with a range of 0–28; 22.1 (\pm .17) for marriage

Table 1
Items included in norm scale calculations for education, marriage, and nutrition

Favorable education descriptive norm	Favorable education injunctive norm	Favorable marriage descriptive norm	Favorable marriage injunctive norm	Favorable nutrition descriptive norm	Favorable nutrition injunctive norm
<p>Most adolescent girls:</p> <ul style="list-style-type: none"> • are absent from school to do household chores • who go to school engage in premarital sex • are less attentive in their education than boys • drop out of school once they get married • negotiate financial support for their school needs • earn income and provide for the family, instead of going to school • earn an income to cover their school needs 	<p>Most people expect girls in the community:</p> <ul style="list-style-type: none"> • to have the same opportunity in education as boys • to do household chores instead of going to school • Parents think adolescent girls who go to school engage in premarital sex • Parents think adolescent girls are less attentive in their education than boys • Others/in-laws expect girls to stop attending school once they are married • Parents expect adolescent girls to earn an income and provide for the family instead of going to school 	<p>Most adolescent girls:</p> <ul style="list-style-type: none"> • marry before the age of 18 y • marry after they turned 18 y • have a say whether or not marry • choose who they would marry • chose when they would marry • have the final decision over their decision to marry • are abducted for marriage • are most likely to talk to their parents before making decision to marry 	<p>Parents expect adolescent girls:</p> <ul style="list-style-type: none"> • to get married before the age of 18 y • to only marry after they turned 18 y • to have a say whether they want to marry or not • to choose when to marry • to choose who to marry • to make the final decision regarding their marriage • to be abducted if they do not accept a proposal from a suitor • to talk to them before making the decision to marry 	<p>Most adolescent girls in the community:</p> <ul style="list-style-type: none"> • eat the same amount of food as their male siblings or husbands • eat after adolescent boys eat • eat after everybody in the family eats • eat the same quality of food as their male siblings • usually eat together with their husbands • eat the same type of food/ quality of food as their husbands' • eat as frequently as boys of the same age • often eat less amount of food than everybody in the family during times of food shortage or drought • usually eat before their male siblings or husbands • usually eat before everybody in the family eats • usually eat after everybody in the family eats • Most pregnant women usually eat before everybody in the family 	<p>Community members expect adolescent girls:</p> <ul style="list-style-type: none"> • to eat the same amount of food as their male siblings or husbands • to eat at the same time as their brothers • to have the same quality of food as everybody in the family • to eat at the same time with their husbands • to eat the same type of food as their husband • to eat as frequently as adolescent boys • to consume less amount of food than everybody in the family during times of food shortage or drought • to eat before everybody in the family during pregnancy • to eat before everybody in the family eats • to eat after everybody in the family eats
Score range 0–28 Guttman's Lambda-2 score = .62	Score range 0–28 Guttman's Lambda-2 score = .77	Score range 0–32 Guttman's Lambda-2 score = .76	Score range 0–32 Guttman's Lambda-2 score = .82	Score range 0–48 Guttman's Lambda-2 score = .74	Score range 0–40 Guttman's Lambda-2 score = .79

Table 2

Adolescent girls' personal and household characteristics, West Hararghe, Oromia, Ethiopia, 2016

	Number	Percent
Adolescent girls' mean age in years (\pm SD)	3,186	14.87 (+1.36)
Adolescent girls' marital status		
Never married	2,843	89.23
Ever married	343	10.77
Adolescent girl's educational status		
Never attended school	592	18.58
Primary (grade 1–8)	2,453	76.99
Secondary (grade 9–12)	141	4.43
Residence		
Boke district	1,022	31.56
Chiro and Doba district	1,085	33.51
Mesela district	1,131	34.93
Adolescent girl's religion		
Christian	385	12.08
Muslim	2,801	87.92
Adolescent girl's father ever attended school		
No	2,111	66.26
Yes	1,075	33.74
Adolescent girl's mother ever attended school		
No	2,651	83.21
Yes	535	16.79
Household wealth quintile		
First	551	20.02
Second	553	20.09
Middle	546	19.84
Fourth	549	19.95
Highest	553	20.09
Household owns radio		
No	2,132	67.58
Yes	1,023	32.42
Household food security status		
Insecure	2,528	80.13
Secure	627	19.87
Adolescent girls' own income		
No	2,839	89.11
Yes	347	10.89

with a range of 0–32; and 29.2 (\pm .21) for nutrition with a range of 0–48 points. For favorable injunctive norms, the weighted mean (\pm SE) for education was 18.2 (\pm .23), with a range of 0–28; 22.7 (\pm .19) for marriage with a range of 0–32 points; and 26.7 (\pm .20) for nutrition with a range 0–40. The Guttman's Lambda-2 test for all norm scores was above .7, except for the education descriptive norm scale, which indicates good reliability of the scales (Table 3).

The findings show the mean scores are not closer to the maximum possible score for both agency and norm measures. A detailed look into the measures revealed that the major deficiencies in the agency score were primarily in two domains: the belief in women's health rights related to contraception use including condoms and the belief in women's right to refuse sex.

Table 3

Agency, descriptive, and injunctive norm scores, West Hararghe, Oromia, Ethiopia, 2016

Scale	Number of items	Guttman's Lambda-2	Weighted mean	Standard error	95% confidence interval	Range
Agency	21	.75	48.2	.37	47.51, 48.97	0–84
Education descriptive norms	7	.62	17.5	.15	17.6, 17.76	0–28
Education Injunctive Norms	7	.77	18.2	.23	17.76, 18.65	0–28
Marriage Descriptive Norms	8	.76	22.1	.17	21.77, 22.43	0–32
Marriage Injunctive Norms	8	.82	22.7	.19	22.29, 23.05	0–32
Nutrition Descriptive Norms	12	.74	29.2	.21	28.76, 29.57	0–48
Nutrition Injunctive Norms	10	.79	26.7	.20	26.33, 27.13	0–40

In the two domains, favorable (prosocial) responses were obtained from <20% of the adolescent girls. The responses to the norm questions reveal to a large extent that the shift to a pro-social stance is inadequate. Most related descriptive and injunctive norm responses tend to agree on nearly all the items. There is agreement regarding equal opportunity for boys and girls in education, school abstinence to do household chores for girls than boys, girls' school dropout following marriage, girls having the final say on their marriage, early marriage (before the age of 18 years) for girls, unmarried girls eating after boys, and married girls eating together with their husbands.

The first model that did not consider social norms showed that adolescent girls' agency was positively and significantly associated with the age, education status of the adolescent girl, and father's literacy. Similarly, having a father who had attended school and the presence of a radio in the household were significantly associated with adolescent girls' agency. The associations between adolescent girls' agency and the three descriptive norms studied in model 2 were statistically significant ($p < .05$). The associations between adolescent girls' agency and the injunctive norms for marriage and nutrition were also statistically significant; however, the association between agency and the injunctive norm for education and nutrition was not statistically significant (Table 4). The R-square values were 13.3% for model 1 and 28.11% for model 2, indicating that there is a better fit to the model when the six norm scales are included (Likelihood Ratio chi-square (6) = 656.90, $p < .0001$; Table 4).

Discussion

The findings of this study highlight the importance of fostering favorable injunctive and descriptive social norms to enhance adolescent agency [20]. Favorable social norms help to build adolescent girls' confidence to better stand up for their rights. Adolescents girls have more opportunities to enhance their agency and gain more societal respect and autonomy to make decisions in favor of their health and well-being, such as postponing early marriage and their first childbirth [21].

The agency scale domains related to the belief in women's health rights were found to relate to contraception use, including condoms. The belief in women's right to refuse sex had largely unfavorable responses. These items are directly related to improving the sexual and reproductive health of young adolescent girls. This indicates the need for more explicit interventions that address agency related to sexual and reproductive rights for young adolescent girls [16,22]. In Sub-Saharan Africa, young adolescents may have a general awareness about sexual and reproductive health matters but lack in-depth knowledge to sufficiently protect themselves from sexual risks [23]. Despite the evidence that sex education does not promote promiscuity

Table 4
Adolescent girls' agency and associated factors in West Hararghe, Oromia, Ethiopia, 2016

	Unadjusted bivariate (weighted), β	Multivariable (weighted) model 1 unstandardized β	Multivariable (weighted) model 2	
			Unstandardized β	Standardized β
Adolescent girl's age (y)				
13	Ref	Ref	Ref	Ref
14	1.07**	.98*	1.11**	.05
15	1.99***	2.11***	2.08***	.11
16	3.29***	2.67***	2.76***	.12
17	3.75***	3.15***	2.97***	.13
Adolescent girl's educational status				
Never attended school	Ref	Ref	Ref	Ref
Primary (grade 1–8)	3.39***	3.39***	2.37***	.12
Secondary (grade 9–12)	9.98***	8.19***	7.22***	.19
Adolescent girl's marital status				
Never married	Ref	Ref	Ref	Ref
Ever married	2.51***	2.39**	2.16***	.08
Adolescent girl's religion				
Christian	Ref	Ref	Ref	Ref
Muslim	−5.06***	−3.53***	−2.73***	−.11
Residence				
Boke district	Ref	Ref	Ref	Ref
Chiro and Doba district	1.79***	.68	.87**	.05
Mesela district	1.41***	.14	−.22	−.01
Father attended school				
No	Ref	Ref	Ref	Ref
Yes	2.26***	1.19***	1.06***	.06
Mother ever attended school				
No	Ref	Ref	Ref	Ref
Yes	1.82***	.15	.29	.01
Household wealth quintile				
First	Ref	Ref	Ref	Ref
Second	.81	.88*	.37	.02
Middle	.46	.38	.14	.01
Fourth	.12	−.17	−.03	−.001
Highest	1.81***	.87	.63	.03
Household owns radio				
No	Ref	Ref	Ref	Ref
Yes	1.55***	.56	.67*	.04
Household food security status				
Insecure	Ref	Ref	Ref	Ref
Secure	1.83***	.65	.15	.01
Adolescent girls' favorable education descriptive norm	.52***		.19***	.09
Adolescent girls' favorable education injunctive norm	.46***		.09	.05
Adolescent girls' favorable marriage descriptive norm	.52***		.13**	.07
Adolescent girls' favorable marriage injunctive norm	.52***		.21***	.13
Adolescent girls' favorable nutrition descriptive norm	.43***		.20**	.14
Adolescent girls' favorable nutrition injunctive norm	.43***		.12*	.08
R-square		13.3%	28.11%	
Likelihood ratio test (compared model 1 vs. model 2)		Likelihood ratio chi-square (6) = 656.90; $p < .0001$		

Weight was done to account for complex survey design.

p value for the linear regression analysis: * $p < .10$, ** $p < .05$, *** $p < .01$.

[24], opinions are divided even in high-income settings [25]. Interventions that promote adolescent health should be comprehensive and delivered in a supportive environment to have an impact [26].

Our work indicates the need for developing and nurturing favorable social norms to influence adolescent girls' agency and eventually their behavior [27]. Negative social norms may not be easily amenable to quick change, but they can be modified and even abandoned by closely and persistently working with influential leaders as well as the society at large [28]. Some encouraging changes in social norms that support gender equality have been observed in Ethiopia [29]. Early marriage reduction and increasing educational opportunities for girls in Ethiopia have progressively improved [7,8]. However, this study reveals that there is a belief in women's health rights that is

related to contraception use and also a belief in women's right to refuse sex.

Considering Ethiopia is still predominantly a patriarchal society, and the mean social norms and agency scores are encouraging. However, the findings indicate more work is needed to improve the scores through effective interventions. Although evidence of intervention effectiveness from low-income settings are generally lacking [30], various interventions that helped foster adolescent girls' agency, including the Village Savings and Loan Association model, in which girls were organized into groups and program content was delivered primarily through peer educators and linked to Social Action and Analyses groups, have been implemented successfully in Ethiopia to improve adolescents' sexual and reproductive health [31].

Measuring adolescent girls' agency and social norms is a complicated undertaking, and there are no agreed on standard tools and procedures. The scales we have constructed are based on the available data and as such, not primarily targeted to develop and validate the scales. We tried to build on the work that CARE has initiated and tested for measuring girl's agency [19]. As each of the domains had different numbers of items, obviously summing them together creates bias in the agency scale toward the domain with more items. We consider this to be a limitation in statistical terms; however, elements of adolescent girls' agency in actual situations are not equally distributed in the predefined domains. The observed associations between adolescent girls' agency and the norm scores indicate the two are highly intertwined, and interventions to improve adolescent girls' health and well-being need to consider not only individual factors but also social and structural factors [30]. However, items used in constructing the scales and their interpretation of responses could vary across contexts [32], and any comparison across varying contexts will need to consider the relativity of the contexts [33]. Further research to improve the way agency and social norms are measured is necessary to track progress robustly and to allow comparisons across contexts within a country and across countries. Social norms are in some ways dynamically unique to specific contexts and societies even within a country.

The findings of this study have important implications for enhancing adolescent girls' sexual and reproductive health rights and status in several ways. First, it emphasizes the need to consider social norms in this effort. So far, interventions to improve sexual and reproductive health of adolescents in low-income settings have been focused primarily on expanding access to health services and education, with limited efforts for addressing sociocultural barriers. Second, the findings related to the belief in women's health rights and the belief in women's right to refuse sex are serious impediments for adolescent girls to make rational decisions in safe sex practices because there is limited access to contraception methods (including condoms) that are free from social inhibitions. Third, the positive outlook for early marriage could encourage adolescent girls to use their enhanced agency against themselves.

In conclusion, this study showed a significant correlation between social norms and adolescent girls' agency, indicating the need to incorporate interventions that favorably influence social norms in efforts aimed at enhancing adolescent girls' sexual and reproductive health. Further research is necessary to address measurement issues within specific sociocultural contexts.

Acknowledgments

The authors thank the Administration, Health, and Women's affairs offices (at all levels) for providing the necessary support for the successful completion of the fieldwork. The authors are grateful to experts at the Addis Continental Institute of Public Health and CARE for invaluable contributions during the process of developing the study protocol and tools.

Funding Source

The authors gratefully acknowledge the grant received from the Bill and Melinda Gates Foundation (Grant No. OPP1127875).

References

- [1] Mmari K, Sabherwal S. A review of risk and protective factors for adolescent sexual and reproductive health in developing countries: An update. *J Adolesc Health* 2013;53:562–72.
- [2] Sommer M, Mmari K. Addressing structural and environmental factors for adolescent sexual and reproductive health in low- and middle-income countries. *Am J Public Health* 2015;105:1973–81.
- [3] Salam RA, Faqqah A, Sajjad N, et al. Improving adolescent sexual and reproductive health: A systematic review of potential interventions. *J Adolesc Health* 2016;59:S11–28.
- [4] Gates MF. Putting women and girls at the center of development. *Science* 2014;345:1273–5.
- [5] UNDP. Sustainable development goals. Available at: http://www.undp.org/content/dam/undp/library/corporate/brochure/SDGs_Booklet_Web_En.pdf. Accessed December 25, 2017.
- [6] Kaber N. Resources, agency, and achievements: Reflections on the measurement of women's empowerment. *Dev Change* 1999;30:435–64.
- [7] Sida. A profile on gender relations: Towards gender equality in Ethiopia. Available at: https://www.sida.se/contentassets/54d269b9567243f0861deacae205859a/towards-gender-equality-in-ethiopia_470.pdf. 2003. Accessed December 25, 2017.
- [8] Ethiopian Society of Population Studies/UNFPA. Gender inequality and women's empowerment: In-depth analysis of the Ethiopian demographic and health survey 2005. Available at: https://www.itacaddis.org/docs/2013_09_24_08_13_27_Gender%20profile%20UNFPA%202008.pdf. 2008. Accessed December 25, 2017.
- [9] Molla M, Berhane Y, Lindtjorn B. Traditional values of virginity and sexual behaviour in rural Ethiopian youth: Results from a cross-sectional study. *BMC Public Health* 2008;8:9.
- [10] Guttmacher Institute. Sexual and reproductive health of young women in Ethiopia. Available at: <https://www.guttmacher.org/fact-sheet/sexual-and-reproductive-health-young-women-ethiopia>. 2014. Accessed March 9, 2018.
- [11] Federal Democratic Republic of Ethiopia. The revised family code- PROCLAMATION No.213/2000. 2000. Available at: <http://www.refworld.org/pdfid/4c0ccc052.pdf>. Accessed April 2, 2018. Federal Negarit Gazetta.
- [12] Marshall E, Lyytikäinen M, Jones N. Child marriage in Ethiopia: A review of the evidence and an analysis of the prevalence of child marriage in hotspot districts. 2016. Available at: https://www.unicef.org/ethiopia/Evidence_Review.pdf. Accessed October 20, 2018.
- [13] UNESCO. Ethiopia: Education for all 2015 national review. Available at: <http://unesdoc.unesco.org/images/0023/002317/231724e.pdf>. 2015. Accessed December 25, 2017.
- [14] CARE USA. Women's empowerment framework. Available at: <https://www.care.org/our-work/womens-empowerment/gender-integration/womens-empowerment-framework>. 2014. Accessed December 25, 2017.
- [15] Chung A, RN R. Social norms: A review. *Rev Commun Res* 2016;4:1–28.
- [16] Vu L, Pulerwitz J, Burnett-Zieman B, et al. Inequitable gender norms from early adolescence to young adulthood in Uganda: Tool validation and differences across age groups. *J Adolesc Health* 2017;60:S15–21.
- [17] Stark L, Asghar K, Seff I, et al. How gender- and violence-related norms affect self-esteem among adolescent refugee girls living in Ethiopia. *Glob Ment Health (Camb)* 2018;5:e2.
- [18] Heckert J, Fabic MS. Improving data concerning women's empowerment in Sub-Saharan Africa. *Stud Fam Plann* 2013;44:319–44.
- [19] CARE USA. Women's Empowerment – Multidimensional Evaluation of Agency, Social Capital & Relations (WE-MEASR): A tool to measure women's empowerment in sexual, reproductive and maternal health programs. Atlanta, GA: CARE USA; 2014.
- [20] The World Bank Group. Voice agency and empowering women and girls for shared prosperity. Available at: http://www.worldbank.org/content/dam/Worldbank/document/Gender/Voice_and_agency_LOWRES.pdf. 2014. Accessed January 17, 2018.
- [21] NORAD. Girls' education. Available at: <https://www.norad.no/en/front thematic-areas/education/girls-and-education/>. 2011. Accessed May 2, 2018.
- [22] Igras SM, Macieira M, Murphy E, Lundgren R. Investing in very young adolescents' sexual and reproductive health. *Glob Public Health* 2014;9:555–69.
- [23] Bankole A, Biddlecom A, Guiella G, et al. Sexual behavior, knowledge and information sources of very young adolescents in four Sub-Saharan African countries. *Afr J Reprod Health* 2007;11:28–43.
- [24] UNAIDS. UNAIDS says sex education does not promote promiscuity. Joint United Nations Programme on HIV/AIDS. *AIDS Policy Law* 1997; 12:19.
- [25] Schalet A. Must we fear adolescent sexuality? *Medsc Gen Med* 2004;6:44.
- [26] Gavin LE, Catalano RF, David-Ferdon C, et al. A review of positive youth development programs that promote adolescent sexual and reproductive health. *J Adolesc Health* 2010;46(3 Suppl.):S75–91.

- [27] Warner TD, Giordano PC, Manning WD, Longmore MA. Everybody's doin' it (right?): Neighborhood norms and sexual activity in adolescence. *Soc Sci Res* 2011;40:1676–90.
- [28] Malhotra A, Warner A, McGonagle A, Lee-Rife S. Solutions to end child marriage-what evidence shows. Available at: <https://www.icrw.org/wp-content/uploads/2016/10/Solutions-to-End-Child-Marriage.pdf>. 2011. Accessed February 5, 2018.
- [29] Jones N, Tefera B, Stephenson J, et al. Early marriage and education: The complex role of social norms in shaping Ethiopian adolescent girls' lives. Available at: <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9183.pdf>. 2014. Accessed February 5, 2018.
- [30] Salam RA, Das JK, Lassi ZS, Bhutta ZA. Adolescent health interventions: Conclusions, evidence gaps, and research priorities. *J Adolesc Health* 2016;59:S88–92.
- [31] Edmeades J, Hayes R. Improving the lives of married adolescent girls in Amhara, Ethiopia - a summary of the evidence. Available at: <https://www.care.org/sites/default/files/documents/TESFA%20Final%20Evaluation.pdf>. 2014. Accessed December 25, 2017.
- [32] Yount KM, VanderEnde KE, Dodel S, Cheong YF. Measurement of women's agency in Egypt: A national validation study. *Soc Indic Res* 2016;128:1171–92.
- [33] Yount KM, Peterman A, Cheong YF. Measuring women's empowerment: A need for context and caution. *Lancet Glob Health* 2018;6:e29.