Sexual and Reproductive Health Assets during Transitions into Adolescence in Humanitarian Settings

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Short Abstract

Very young adolsecents (VYAs) aged 10-14 years in humanitarian settings is a negelected population in terms of sexual and reproductive health (SRH) research. This study exploes interpersonal relationships and SRH information among VYAs in humanitarian settings. Cross-sectional data was collected among 10-14 year olds (N=805) residing in refugee camps in Thailand and Ethiopia. We conducted an exploratory analysis of the range and correlates of interpersonal relationships and SRH information. Multiple logistic regression were used to model association with each outcome by age, gender, pubertal status, schooling and orphanhood. While outcome patterns varied by age, pubertal status was a stronger predictor of variablity in responses among both boys and girls. Few reported having learnt about body changes or pregnancy; the majority indictaed a need for more information. There is need for interventions that target the early antecendents of subsequent SRH and help promote heahty transitions into adolescence in humanitarian contexts.

Background

The ages 10-14 years, generally defined as early adolsecence, is one of the most critical stages of human development as marked by dramatic physcial, social and cognivite changes.[1,2] Yet, very young adolescents (VYAs) is one of the most neglected populations in terms of research, particularly in the field of sexual and reproductive health (SRH) due to the combined sensitivity of the topic and age group. [1-3] Research and programmatic efforts in SRH have typically focused older youth (aged 15 years and above) while little is known about the specific needs and concerns of VYAs. [1,4,5] Importantly, SRH and in particular unsafe sexual behavior is one of the top causes of disability-adjusted life years among 10-14 year olds globally even though the majority has not yet engaged in sexual relationships. [6] This is especially true among young girls who during the transition to adolescence face increased risks of sexual coercion, [7] early marriage, sexually transmitted infections and consequences due to early pregnancy. [4,6,8] In low and middle income countries, young adolescent girls account for almost one in three births (2 million out of 7 million) under the age of 18 every year and have double the risk for maternal mortality and morbidity than older peers. [9] Sexually experienced VYAs typically lack the information, skills and cognitive readniess needed to make informed decisions related to SRH including consensual sex and contraceptive use. [3] Studies in sub-Saharan Africa show that few parents discuss issueed related to puberty and SRH with their 10-14 year olds and many VYAs lack access to sexuality education in schools. [2]

Furthermore, the SRH of refugee and migrant populations, while growing, remains a neglected field of research. Research conducted among refugee populations

has focused primarily on epidemiology of infectious disease and health systems research[10]. While reproductive health became an area of increasing concern in the mid-1990s, research continues to be largeley neglected due to the view that reproductive health is a long-term issue, less critical to understand and address during humanitarian emergencies than more immediate concerns. [11] Additionally, what research there is varies widely in quality, due to differences in data collection methods, analytic methods, and the limitations imposed by working in a humanitarian emergency. [11] The lack of quality research and prioritizion of othe fields has resulted in a dearth of up to date research on reproductive health in humanitarian emergencies. The combination of these two fields, the SRH needs and assets of VYAs in refuge and migrant settings, has been almost completely overlooked.

In an attempt to address this research gap, the Women's Refugee Commission and Johns Hopkins School of Public Health, funded by the U.S. Centers for Disease Control and Prevention explored the risk and protective factors for adolescent SRH among VYAs residing in refugee and migrant camps in Thailand and Ethiopia.

The current study was guided by the conceptual framework for early adolescence developed by Blum, Astone, Decker and Mouli (2014). Blum et al. introduce a set of ecological-level factors at the macro, community, family, school and peer level that all influence healthy adolescent development. [1] In the current study, we focus on parental, peer and individual-level assets that have been proposed as important predictors for adolescent SRH and their relation to age and puberty among other factors. The study has two main research objectives: 1) to explore the range and correlates of interpersonal relationships with parents and peers; to 2) asses the range and correlates of puberty and

SRH information during transitions to adolescence. We describe how these factors vary by age, gender, pubertal development and schooling. A sub-question is whether these patterns are consistent across our two study sites, indicating underlying consistency in the transitions to adolescence; or whether they vary significantly across sites, indicating the importance of social environment on transitions to adolescence.

Methods

We conducted a cross-sectional survey about SRH risk and needs among VYAs in two refugee and migrant camps in Mae Sot on the Thailand-Burma border and in Kobe Refugee Camp on the Ethiopia-Somalia border. Our study population included 400 adolescents of approximately equal numbers boys and girls between the ages of 10-14 years who were recruited for interviews in each location. After obtaining parental consent and adolescent assent, respondents were interviewed face-to-face in the local language of each site. The study was approved by the Institutional Review Board (IRB) at the Johns Hopkins Bloomberg School of Public Health and by and in-country IRB boards.

For the current study we condcuted an exploratory analysis of the range and correlates of of interpersonal relationships and puberty/SRH information. Three main outcome domains were explored:

1) Interpersonal relationships with parents was assessed through four Likert-type questions about parental connectedness and monitoring. Parental connectedness consisted of two variables assesing *parents caring* (extent to which parents care about you) and *parents sharing* (extent to which you can share personal matters with your parents). Parental monitoring was asssed though two variables, *monitoring of friends* (extent to which your parents know who your friends are)

and *monitoring of time* (extent to which your parents know what you do on your free time) Items were analyzed continuously and dichotomized into high vs. low connectedness and monitoring for each variable.

2) Interpersonal relationships with peers was conceptualized as the number of close friends (continuous) and number of opposite-sex close friends (continuous and dichotomized into one or more *vs*. none). Three questions were used to assess views about boy/girl relationships by asking the respondent whether "Most of your friends think it is ok" for boys and girls to: 1) talk and spend time together, 2) spend time alone if they like each other, and 3) have physical contact if they like each other (agree/disagree).
3) Puberty and SRH information and knowledge consisted of a set of variables exploring whether respondents have access to the information they need to understand body changes, whether they want more information about body changes and whether they learnt about pregnancy (yes/no). Those who reported starting puberty were also asked whether they learnt anything about puberty before these changes occurred. Finally, respondents were asked to name their top three most important puberty changes information sources and their top three *preferred* information sources.

Key predictor variables included age (10-12 *vs*. 13-14); gender (boy, girl); pubertal status (girls started menstruation, boys started voice change/hair growth); education status (in school, out of school). We also included a variable for whether the respondets parents were alive (both, mother only, father only, orphan). In addition we describe sociodemographic sample charachteristics including duration in each refugee or

migrant camp, school attendance and living situation including the prescence of a regular place to stay.

We first summarized descriptive sample statistics and described the distribution of each outcome domain above. Next, we investigated patterns in responses across age, sex, and site to questions related to interpersonal relationships and puberty/SRH information. Dichotomous outcomes were explored through testing the difference in proportions by exposure variables using Pearson's Chi-sqaure and Fisher's exact test in the case of small cell numbers. Continous outcomes were averaged with associated standard error (SE); mean values were compared between exposure categories through independent t-tests assuming equal variances. In the next step, mulitivariate binary logistic regression was used to investigate the association between each outcome and the predictors, controlling for all other variables in the models. Interactions between gender, site, schooling and age were explored and stratified analyses were carried out in the case that significant interactions were found. All analyses were done using Stata version 12.0 with significant associations assessed at the alpha <0.05 level.

Results

Table 1 summarizes the sociodemographic background characteristics of the sample. The final sample included 805 respondents (n=406 in Ethipia, n=399 in Thailand). About half of respondents in both sites were girls (52.7% in Ethiopia, 50.4% in Thailand) and half were boys. The average age of respondents was higher in Ethiopia at 12.3 years compared to 11.8 years in Thailand (p<.001). The majority of respondents in Ethiopia had resided in the camp for less than five years, while in Thailand the majority have resided in Mae Sot for five years of more (p<.001). Most respondents

reported living with both parents (72.7% vs. 62.4% in Ethiopia and Thailand respectively) although a higher proportion in Thailand reported living with an adult caregiver (18.6% vs. 2.7%). In both sites, less than one percent reported living without an adult caregiver. About one in three Thailand adolescents reported to not have a regular place to stay compared to less than 2 percent in Ethiopia ($p<.001$). While the majority in both sites reported ever attending school, the proportion currently enrolled in school was lower in Thailand compared to Ethiopia (87% *vs*. 91.4%). In both countries, the majority of respondents had not yet started puberty (69.5% in Ethiopia, 63.2% in Thailand) and almost 20 percent of respondents in Ethiopia repored not knowing if they had reached puberty. The proportion reaching puberty was highest among 13-14 year-olds while not knowing pubertal status was more common among 10-12 year-olds (data not shown). There were no differences in pubertal status by gender.

[Insert Table 1 here]

Interpersonal relationships

Parents: Table 2 shows the range and variability in parental connectedness – the extent to which the respondents feel that their parents care about them and their comfort in sharing personal things with their parents – and the extent to which parents monitor their time and friends. 13-14 year olds reported consistently higher scores for parental connectedness and monitoring compared to younger peers. Similarly, those who started puberty reported higher scores for both connectedness and monitoring than those who had not yet reach that stage. VYAs in Thailand reported slightly higher scores for parents sharing and monitoring of friends, but lower for parent sharing and monitoring of time compared to peers in Ethiopia.

In the adjusted analaysis, the odds of parental caring was higher among 13-14 year olds compared to the younger age group (OR=2.0, CI [1.2-3.7]) while no significant differences was found for parental monitoring after controling for other factors. VYAs who reported starting puberty (irrespective of age) had higher odds of parents monitoring their friends (OR=1.8, CI [1.2-2.7]) and time (OR=1.5, CI [1.1-2.3]) compared to those who did not start puberty. Relative to pre-pubescent adolescents, those who did know if they have started puberty had 60% lower odds of reporting a high caring parent, 40% lower odds of reporting high parental friend monitoring, and 50% lower odds of reporting that their parents monitor their time (OR=0.4 CI(0.2-0.7), OR=0.6 CI(0.3-0.9)), and OR=0.5 CI(0.3-0.7), respectively).

When compared to boys, girls were almost twice as likely to report caring parents (OR=1.9, CI [1.2-3.4]) and 50% more likely to report that their parents monitor their time (OR=1.5, CI [1.1-2.0]) Adolescents in Thailand had significantly lower odds of reporting that they were comfortable sharing personal things with their parents and lower odds of parents mointorng their time relative to youth in Ethiopia (OR=0.4, CI [0.3-0.5] and OR=0.4, CI [0.4-0.6] respectively).

[Insert Table 2 here]

Peers: Turning to interpersonal relationships with peers, Table 3.a. shows the number of total close friends and the number of opposite-sex close friendships. Because significant interactions were found by site, gender and age, we present peer relationships stratified by site and for boys and girls in each age group. In Ethiopia, older boys and girls reported more close friends than their younger counterparts. The majority of VYAs reported no opposite-sex close friendships, and these were least common among boys ages 10-12 and

girls ages 13-14. Adolescents who have started puberty reported a mean of 3.5 (SE .21), close friends. In Thailand, females ages 13-14 reported the fewest numbers of close friends (2.0 [SE 0.20]) and were more likely to report no opposite-sex friends than other age/gender groupings. In Thailand, being in school was positively associated with the total number of close friends and with the likelihood of having at least one friend of the opposite sex.

In the adjusted model we saw similar patterns in the likelihood of reporting at least one friend of the opposite sex. In Ethiopia, adolescents who started puberty or who do not know if they have started puberty had significantly higher odds of reporting having at least one friend of the opposite sex (OR=2.8 CI [1.3-5.9]) and OR=2.0 CI [1.2-3.5]) relative to adolescents who have not started puberty. This relationship was consistent in Thailand, where adolescents who have started puberty were twice as likely to report having at least one close friend of the opposite sex (OR=2.2 CI [1.3-3.9]). In Thailand, adolescents in school had 2.8 times higher odds (CI 1.2-7.3) or having a close opposite-sex friend than peers out of school.

[Insert Table 3.a. here]

To gauge attitudes towards relationships with the opposite sex, we asked a series of questions regarding whether it is appropriate for boys and girls to spend time together, time alone, or to have physical contact (Table 3.b.). There were no statistically significant differences between the age groups. In both Ethiopia and Thailand, in school adolescents were more likely to say that it is acceptable for boys and girls to spend time together relative to out of school youth (OR=3.6, CI [1.4-9.0]) and OR=2.5, CI [1.1-5.9]), respectively). Additionally, in both countries, adolescents who started puberty were more

likely to say that it is acceptable for boys and girls to spend time alone [OR=2.3, CI [1.1-4.8] in Ethiopia, OR=1.8, CI [1.0-3.2] in Thailand) and to have physical contact [OR=5.4 CI [2.3-12.0] in Ethiopia, OR=4.1, CI [1.9-8.2] in Thailand] than adolescents who have not yet gone through puberty. In Thailand, but not in Ethiopia, adolescents with 3-4 friends of the opposite sex had higher odds of reporting it is acceptable for boys and girls to spend time together (OR=2.1, CI [1.0-4.3) and to have physical contact (OR=3.5, CI [1.5-8.1]).

[Insert Table 3.b. here]

Puberty and SRH information

Turning to information and knowledge about puberty and SRH, lower proportions of the youngest age group reported access to information about body changes, learning about puberty changes before these occurred and leanring about pregnancy compared to their older peers. Notably, the majority in both age groups reported that they want access to more information. We also noted differences by site; compared to Thailand respondents VYAs in Ethiopia reported greater access to information about body changes, having learnt about puberty changes and pregnancy. Higher proportions of girls than boys reported learning about puberty before these changes occurred, and knowledge about pregnancy was more common among those currently in school compared to out-of-school counterparts. Pregnancy knolwedge was also substantially more common among those who started puberty compared to those not yet in this stage.

In the adjusted model, the odds of having learnt about pregnancy was higher among 13-14-year-olds compared to the younger age group (OR=1.6, CI [1.0-2.5] and lower among Thailand respondents compared to Ehtiopia peers (OR=0.2, CI [0.1-0.4]. So

too, after controlling for all other factors in the model, including age, those who started puberty had substantially higher odds of having learnt about pregnancy than their pre-pubertal peers (OR=6.1, CI [3.5-10.6].

Information sources: We also explored what information sources VYAs report as most important for having learnt about puberty changes. In Ethiopia, the three most important sources for both boys and girls were: mother, father and other family members or friends. In contrast, their preferred source of information were: friends, other family memebers (primarily siblings) and mother (Figures 1.a-b). In Thailand, the three most important sources for having learnt about puberty were: mother (more so among girls), teachers and father (among boys). About one in for respondents in Thailand stated that they did not learn about puberty and therefore did not report an information source. For their three preferred sources, VYAs in Thailand listed teachers, doctors/nurses or other sources including media. Girls (but not boys) also reported their mother as a preferred source (Figures 1.c-d).

Summary and conclusion

Adolescence is a time marked by rapid and drastic change, both physically, emotionally, and socially. In this study, we explored interpersonal relationships and access to information and knowledge about body changes and SRH during transitions into adolescence in humanitatin settings. Our results indiciate that while age is associated with these outcomes, pubertal status appears to be more strongly associated with variablity in responses. Notably, adolescents who did not know if they had experienced puberty reported low levels of parental connectedness and monitoring relative to their peers who had not experienced puberty. This indicates that adolescents who have low

levels of connection with parents may not be receiving adequate information on puberty due to a lack of communication with trusted adults. We also noted differences by gender in that girls to a greater extent than boys feelt thay they can share personal matters with their parents, but they also receive closer monitoring of what they do in their free time. In both countries and across gender, very few adolescents report having close friendship with the opposite sex; this appears to change with the onset of puberty which also brings greater acceptance of boy/girl relationships including spending time along and having physical contact. The consistency of this relationship across two very different contexts is worth noting. Finally, in both settings the gap in knowledge about body changes and SRH versus the reported need for more information is vast, particularly among youngest age group (10-12). While knowledge appears to be higher in Ethiopia than Thailand, the reported need for more information in both sites is similar.

Taken together, our results indiciate a need to focus on information and support during puberty transitions as a means to promote healthy adolescent development in humanitarian contexts. Specfically, interventions need to be sensitive to the fact that puberty onset rather than age may signal increased need for SRH information and support. Early interventions should target the antecendents of subsequent SRH, such as parental-child communication and support, as well as education about puberty and body changes both for in- and out-of-school adolescents.

Table 1. Sample characteristics by country.

	Ethiopia N=406		Thailand N=399		Total N=805	
	n	%	n	%	n	%
Gender						
Boy	192	47.3	198	49.6	390	48.5
Girls	214	52.7	201	50.4	415	51.6
Age						
10 to 12	208	51.2***	262	65.7***	285	35.4
13 to 14	198	48.8	137	34.3	520	64.6
Mean (SD)	12.3	1.4	11.8	1.4	12.1	1.4
Duration in camp						
1 year or less	7	1.7***	63	15.8***	70	8.7
2-4 years	382	94.1	95	23.8	477	59.3
5 years or more	1	0.25	231	57.89	232	28.8
Do not know	16	3.9	10	2.5	26	3.2
Living situation						
Both parents	295	72.7***	249	62.4***	544	67.6
Father only	22	5.4	14	3.5	36	4.5
Mother only	63	15.5	49	12.3	112	13.9
Adult caregiver	11	2.7	74	18.6	85	10.6
No adult caregiver	1	0.3	2	0.5	3	0.3
N/A	14	3.4	11	2.8	25	3.1
Parents alive						
Both	335	82.5**	351	88.0**	686	85.2
Father only	18	4.4	4	1.0	22	2.7
Mother only	39	9.6	31	7.8	70	8.7
Orphan	14	3.5	13	3.3	27	3.4
Regular place to stay	399	98.3***	270	67.7***	669	83.1
Schooling						
Ever attended	385	94.8	385	96.5	770	95.7
Currently enrolled	352	91.4*	335	87.0*	687	89.2
Pubertal status						
Did not start puberty	282	69.5***	252	63.2***	534	66.3
Started puberty	42	10.3	139	34.8	181	22.5
Do not know	82	20.2	8	2.0	90	11.2

***p<.001, **p<.01, *p<.05 comparing the proportion with each characteristic between Ethiopia and Thailan

Table 2: Interpersonal relationships with parents

	Parental Connectedness and Monitoring [a]				**Adjusted Model [b]**			
	Connectedness		Monitoring		Connectedness		Monitoring	
Variable	Parents caring	Parents sharing	Parents monitoring friends	Parents monitoring time	High vs. low caring	High vs. low sharing	High vs. low friend monitoring	High vs. low time monitoring
	Mean (SE)	Mean (SE)	Mean (SE)	Mean (SE)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)
Age								
10-12	3.3 (0.03)	3.1 (0.04)	2.5 (0.05)	2.7 (0.05)	Ref	Ref	Ref	Ref
13-14	**3.5 (0.04)****	**3.2 (0.04)****	**2.7 (0.06)*****	**2.9 (0.05)***	**2.0 (1.2–3.7)****	1.1 (0.8–1.7)	1.2 (0.8–1.6)	1.3 (1.1–2.1)
Site								
Ethiopia	3.3 (0.03)	3.2 (0.03)	2.5 (0.05)	2.9 (0.04)	Ref	Ref	Ref	Ref
Thailand	**3.5 (0.03)****	**3.1 (0.05)***	**2.6 (0.05)***	**2.6 (0.05)*****	1.2 (0.9–2.6)	**0.4 (0.3–0.5)*****	0.8 (0.6–1.2)	**0.4 (0.4–0.6)*****
Gender								
Boy	3.4 (0.04)	3.1 (0.04)	2.5 (0.05)	2.7 (0.05)	Ref	Ref	Ref	Ref
Girl	3.4 (0.03)	3.2 (0.04)	2.6 (0.05)	2.9 (0.05)	**1.9 (1.2–3.4)****	1.4 (0.9–1.9)	1.1 (0.9–1.5)	**1.5 (1.1–2.0)***
Parents Alive								
Both	3.4 (0.03)	3.1 (0.03)	2.6 (0.04)	2.8 (0.04)	Ref	Ref	Ref	Ref
Mother only	3.4 (0.14)	3.0 (0.15)	2.6 (0.19)	2.6 (0.22)	0.9 (0.2–3.8)	0.6 (0.2–1.69	1.5 (0.6–3.6)	0.4 (0.2–1.1)
Father only	3.4 (0.08)	3.3 (0.09)	2.5 (0.12)	2.8 (0.13)	1.4 (0.5–5.2)	1.5 (0.7–3.2)	0.8 (0.5–1.4)	0.8 (0.5–1.4)
Orphan	**2.7 (0.20)*****	3.0 (0.19)	2.5 (0.24)	3.0 (0.2)	**0.2 (0.1–0.5)*****	0.5 (0.2–1.4)	0.9 (0.4–2.2)	1.4 (0.6–3.7)
Education status								
Out of school	3.3 (0.09)	3.2 (0.1)	2.6 (0.12)	2.9 (0.12)	Ref	Ref	Ref	Ref
In school	3.4 (0.02)	3.1 (0.03)	2.6 (0.04)	2.8 (0.04)	**2.6 (1.4–5.5)*****	1.0 (0.5–1.7)	1.2 (0.7–1.9)	1.1 (0.7–1.7)
Pubertal status								
Did not start	3.4 (0.04)	2.9 (0.06)	2.5 (0.07)	2.5 (0.07)	Ref	Ref	Ref	Ref
Started puberty	**3.6 (0.06)*****	**3.2 (0.08)*****	**2.8 (0.07)****	**2.8 (0.09)***	0.8 (0.4–1.8)	1.3 (0.8–2.1)	**1.8 (1.2–2.7)**	**1.5 (1.1–2.3)**
Do not know	**3.9 (0.12)*****	**3.9 (0.12)*****	3.1 (0.39)	3.2 (0.41)	**0.4 (0.2–0.7)****	1.8 (0.8–3.9)	**0.6 (0.3–0.9)**	**0.5 (0.3–0.7)**

***p<.001, **p<.01, *p<.05 comparing the proportion with each characteristic between Ethiopia and Thailand

[a] Comparing mean values between exposure variable categories (e.g. mean score for parents caring comparing 13-14 year olds to 10-12 year old)

[b] Adjusting for all other variables in the table

Table 3.a. Interpersonal relationships with peers

	Ethiopia					Thailand				
Variable	**Descriptive statistics**				**Adjusted model**	**Descriptive statistics**				**Adjusted model**
	Nr close friends	Nr close opposite sex friends			≥1 close opposite sex friend vs. none	Nr close friends	Nr close opposite sex friends			≥1 close opposite sex friend vs. none
	Mean (SE)	None n (%)	1-2 n (%)	3-4 n (%)	aOR (95% CI)	Mean (SE)	None n (%)	1-2 n (%)	3-4 n (%)	aOR (95% CI)
Age and Sex										
Boys 10-12	2.6 (0.11)	67.4	28.3	4.3	Ref	2.6 (0.20)	68.5	18.9	12.6	Ref
Boys 13-14	**3.1 (0.13)***	51.0	40.0	9.0	**1.9 (1.0–3.6)**	2.9 (2.1)	66.2	22.5	11.3	0.7 (0.4–1.5)
Girls 10-12	2.7 (0.10)	57.8	36.2	6.0	1.4 (0.8–2.5)	2.8 (0.15)	74.8	17.8	7.4	0.8 (0.5–1.4)
Girls 13-14	**3.1 (0.14)***	66.3	25.5	8.2	0.9 (0.4–1.7)	**2.0 (0.20)****	83.3	13.6	3.0	0.4 (0.2–1.0)
Parents Alive										
Both	2.9 (0.07)	**59.4***	**34.6***	**6.0***	Ref	2.6 (0.10)	73.8	17.1	9.1	Ref
Mother only	3.0 (0.36)	44.4	38.9	16.7	2.0 (0.7–5.4)	2.5 (0.65)	50.0	50.0	0	2.5 (0.3–18.9)
Father only	2.8 (0.21)	71.8	15.4	12.8	0.7 (0.3–1.5)	3.0 (0.39)	61.3	29.0	9.7	1.6 (0.7–3.5)
Orphan	3.1 (0.26)	71.4	28.6	0.0	0.6 (0.1–2.8)	2.4 (0.50)	76.9	15.4	7.7	1.1 (0.3–410)
Education status										
Out of school	2.7 (0.2)	60.6	30.0	9.1	Ref	1.6 (0.22)	**88.0***	**10.0***	**2.0***	Ref
In school	2.9 (0.06)	61.4	31.5	7.1	1.1 (0.5–2.3)	**2.8 (0.11)*****	70.4	19.1	10.5	**2.9 (1.2–7.3)**
Pubertal status										
Did no start	2.8 (0.07)	**65.3***	**29.1***	**5.7***	Ref	2.6 (0.12)	**76.6***	**14.7***	**8.7***	Ref
Started puberty	**3.5 (0.21)****	45.2	47.6	7.1	**2.8 (1.3–5.9)**	2.7 (0.17)	65.5	25.9	8.6	**2.2 (1.3–3.9)**
Do not know	2.7 (0.13)	51.2	37.8	11.0	**2.0 (1.2–3.5)**	2.0 (0.65)	75.0	0.0	25.0	1.1 (0.2–6.0)

Table 3.b. Views about boy/girl relationships

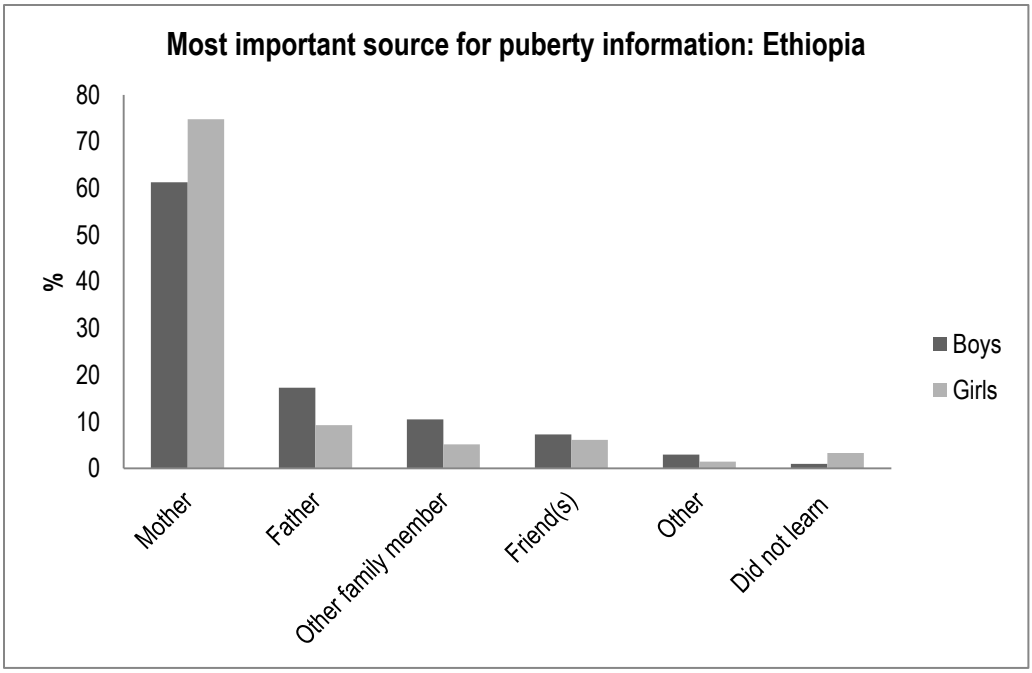
Variable	Ehtiopia (N=385)						Thailand (N=381)					
	Ok talk/spend time		Ok spend time alone		Ok physical contact		Ok talk/spend time		Ok spend time alone		Ok physical contact	
	%	aOR (95% CI)	%	aOR (95% CI)	%	aOR (95% CI)	%	aOR (95% CI)	%	aOR (95% CI)	%	aOR (95% CI)
Age												
10-12	41.8	Ref	27.9	Ref	15.4	Ref	29.0*	Ref	21.4	Ref	13.0	Ref
13-14	38.4	0.7 (0.5–1.0)	31.3	0.8 (0.5–1.4)	17.7	0.6 (0.3–1.2)	39.4	1.2 (0.7–2.1)	27.0	1.0 (0.5–1.8)	11.7	**0.4 (0.2–0.9)**
Gender												
Boy	43.7	Ref	30.7	Ref	15.1	Ref	34.3	Ref	24.8	Ref	14.7	Ref
Girl	36.9	0.7 (0.4–1.0)	28.5	0.8 (0.5–1.3)	17.8	1.1 (0.6–1.9)	30.8	1.1 (0.7–1.7)	21.9	1.0 (0.6–1.7)	10.4	0.9 (0.5–1.8)
Parents Alive												
Both	40.9	Ref	28.4	Ref	16.1	Ref	32.8	Ref	23.4	Ref	13.1	Ref
Mother only	44.4	1.1 (0.4–3.0)	44.4	2.0 (0.7–5.1)	22.2	1.2 (0.3–4.7)	0.0	-	0.0	-	0.0	-
Father only	41.0	1.0 (0.5–2.0)	38.5	1.6 (0.8–3.3)	17.9	1.1 (0.4–2.7)	32.3	0.8 (0.3–1.9)	16.1	0.6 (0.2–1.6)	6.4	0.5 (0.1–2.2)
Orphan	14.3	0.3 (0.1–1.7)	14.3	0.7 (0.1–3.4)	14.3	1.5 (0.3–7.5)	38.3	1.6 (0.4–5.2)	46.1	**3.5 (1.0–11.0)**	15.4	1.4 (0.3–6.9)
Education status												
Out of school	18.2	Ref	15.1	Ref	12.1	Ref	20.0*	Ref	20.0	Ref	12.0	Ref
In school	**44.0****	**3.6 (1.4–9.0)**	**32.4***	**2.6 (0.9–7.2)***	17.6	1.7 (0.5–5.3)	34.6	**2.5 (1.1–5.9)**	23.6	1.3 (0.6–2.9)	12.5	0.9 (0.3–2.2)
Opposite sex friends												
None	43.3	Ref	30.2	Ref	16.7	Ref	25.9**	Ref	20.3	Ref	10.7**	Ref
1-2	34.6	0.7 (0.4–1.1)	29.3	1.0 (0.6–1.6)	15.0	0.8 (0.5–1.5)	53.4	**3.1 (1.7–5.4)**	30.1	1.4 (0.8–2.8)	11.0	0.8 (0.4–1.9)
3-4	39.3	0.8 (0.4–1.9)	25.0	0.7 (0.3–1.7)	21.4	1.5 (0.5–4.2)	44.4	**2.1 (1.0–4.3)**	33.3	1.9 (0.9–4.1)	30.6	**3.5 (1.5–8.1)**
Pubertal status												
Did not start	41.8	Ref	**29.8***	Ref	**16.0****	Ref	**24.6****	Ref	**19.0***	Ref	**8.3*****	**Ref**
Started puberty	42.9	1.6 (0.8–3.3)	42.9	**2.3 (1.1–4.8)**	40.5	**5.4 (2.4–12.0)**	46.8	**2.5 (1.4–4.2)**	30.9	**1.8 (1.0–3.2)**	19.4	**4.1 (1.9–8.2)**
Do not know	32.9	0.8 (0.4–1.3)	21.9	0.8 (0.4–1.4)	6.1	**0.3 (0.1–0.9)**	37.5	1.9 (0.4–8.0)	25.0	1.3 (0.2–7.1)	25.0	3.4 (0.6–19.2)

Table 4: Puberty and SRH information

	Information and knowledge				Adjusted Model	
Variable	Access to information (N=751)	Want more information (N=770)	Learnt about puberty [a] (N=180)	Learnt about pregnancy (N=792)	Learnt about puberty	Learnt about pregnancy [a]
	%	%	%	%	aOR (95% CI)	aOR (95% CI)
Age						
10-12	**50.5*** **	84.1	**24.5** **	**9.5*** **	Ref	Ref
13-14	67.1	86.1	45.0	24.2	1.3 (0.5–3.2)	**1.6 (1.0–2.5)**
Site						
Ethiopia	**71.4*** **	**87.8*** **	**85.7*** **	**20.2*** **	Ref	Ref
Thailand	42.2	81.9	25.4	11.0	**0.04 (0.01–0.1)**	**0.2 (0.1–0.4)**
Sex						
Boy	56.9	83.7	**28.7** **	15.0	Ref	Ref
Girl	57.8	86.0	51.2	16.2	1.0 (0.9–4.4)	1.1 (0.7–1.7)
Parents Alive						
Both	57.8	83.8	38.4	16.1	Ref	Ref
Mother only	61.9	90.9	0.0	13.6	0	0.7 (0.2–2.7)
Father only	50.0	90.9	47.1	14.7	2.3 (0.7–7.7)	0.9 (0.4–1.8)
Orphan	64.0	92.3	60.0	7.7	5.3 (0.8–35.4)	0.5 (0.1–2.4)
Education status						
Out of school	48.0	82.5	39.3	**24.4***	Ref	Ref
In school	58.8	85.5	40.0	14.8	1.0 (0.4–2.9)	0.6 (0.3–1.1)
Pubertal status						
Did not start	55.2	85.9		**9.9*** **		Ref
Started puberty	59.1	83.1		32.0		**6.1 (3.5–10.6)**
Do not know	66.7	83.1		17.2		1.2 (0.6–2.4)

[a] Only asked of those who report that they started puberty.

Figure 1a-b: Most important source and preferred source for puberty information: Ethiopia



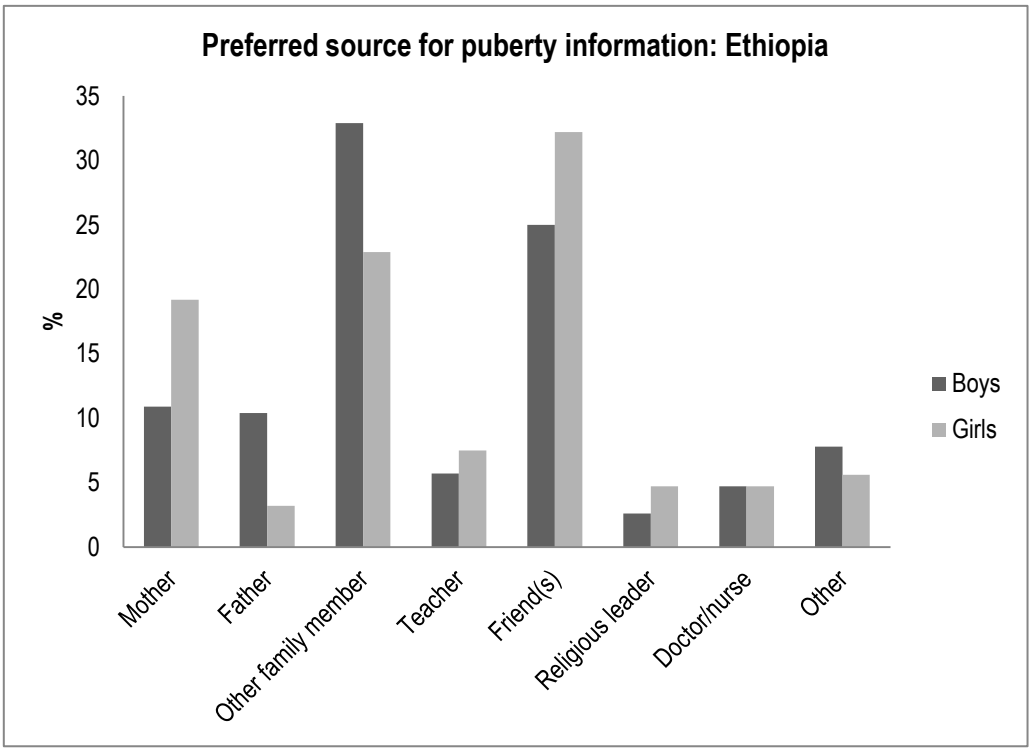
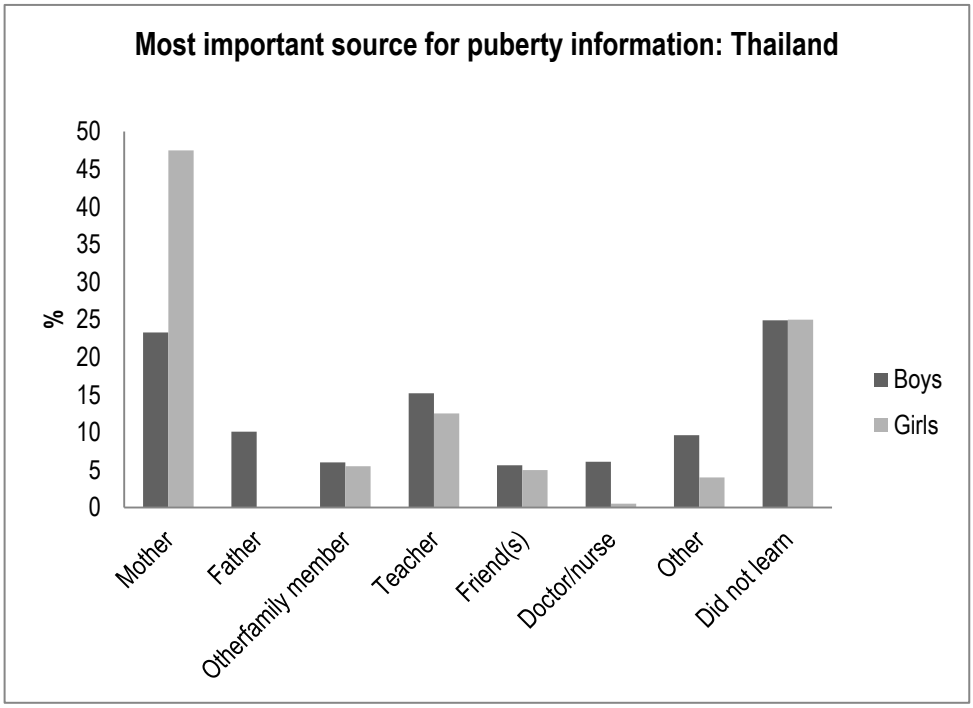
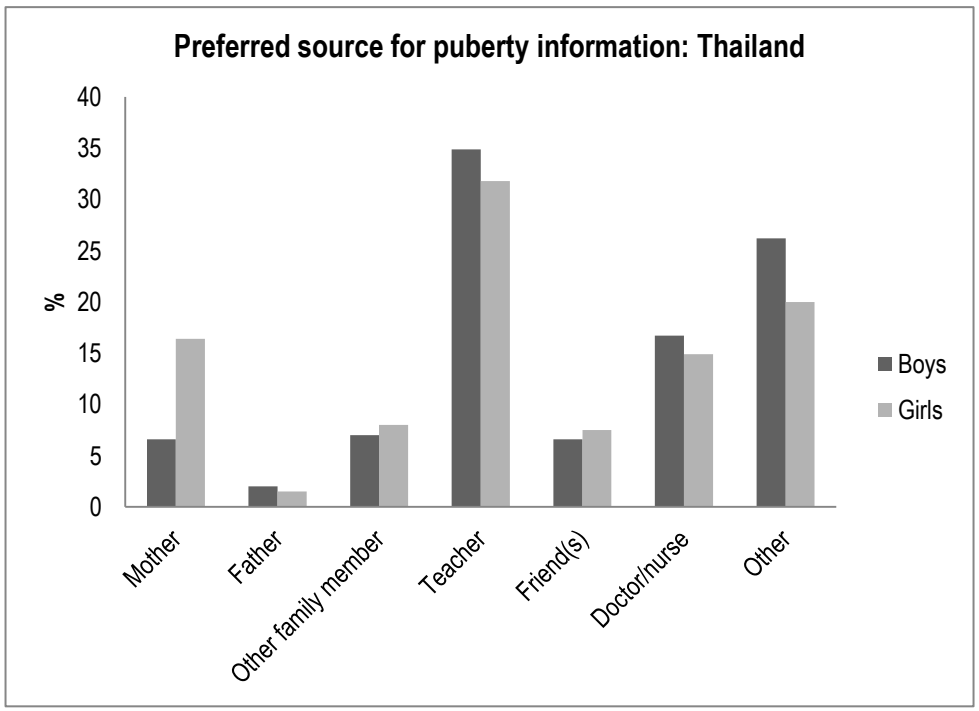


Figure 1c-d: Most important source and preferred source for puberty information: Thailand





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