

Summary Report for CARE Ethiopia

Stress, Menstruation and School Attendance:
Effects of Water Access Among Adolescent
Girls in South Gondar, Ethiopia

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Introduction

In rural Ethiopia, where water sources are often distant and unsafe, women and girls typically experience the greatest burden of poor water access, as they are traditionally responsible for providing for the water and hygiene needs of the family. The physical health effects of drinking unsafe water, not washing one's hands, and not safely disposing of human waste in a latrine are well established, and development projects typically aim to improve these physical health outcomes in their target populations.

However, the social and emotional effects of having poor access to proper water, sanitation, and hygiene (WASH) conditions are not well understood, and there are few studies on this topic. A recent study conducted in Bolivia found a positive association between water security, psychosocial stress, and being female (Wutich and Ragsdale 2008). Although based in an urban setting, this was the first study to our knowledge to systematically analyze some of the psychosocial effects that occur in relation to water access conditions. In addition, other studies have found that resource security is significantly associated with other mental health effects, specifically anxiety and depression. A study in Tanzania found that food security is significantly associated with poor mental health outcomes among women in the study area (Hadley and Patil 2006).

Information is also lacking for understanding the intersection between school attendance and the onset of menarche in sub-Saharan Africa. A study in Tanzania by Marni Sommer (2009) found that menstruation was accompanied by fear, shame and confusion for the girls in the study population; there is a gap in knowledge about puberty and menstruation. In addition, the study found that other structural aspects worsened the fear and shame experienced by the girls - mainly a lack of adequate sanitation facilities and water at the schools and a predominantly male staff.

Stress or anxiety that may be felt in response to difficult living conditions are of concern to development organizations, as they affect the overall well being and quality of life of the communities they serve. Understanding the degree to which WASH may affect stress and emotional well being and social relationships might assist development organizations in better addressing the holistic needs of their beneficiaries. The *Water, Women and Development* (WWD) project is a collaborative research project between Emory University and CARE Ethiopia with the collaboration of colleagues from Jimma University and funding from Emory's Institute for Developing Nations. It aims to examine the relationship of WASH conditions with psychosocial health among women and girls in Ethiopia. As part of this project, Alexandra Fehr of Emory University led research in South Gondar, Ethiopia in June and July, 2010 to examine the following research questions:

1. What is the degree to which water, sanitation, or hygiene (WASH) is a source of stress for girls when considering other sources as well?
2. Within WASH, which specific issues are sources of stress?

3. Among girls, are there particular characteristics such as age or socio-economic status associated with more/less stress and why?

This report describes methods and results that relate to questions one and two. Question three is still being examined and will be shared at a later time.

Methods

Selection

CARE Ethiopia staff at the Debre Tabor office selected three kebeles (towns) in which the research would take place: Kollydengores, Burokatona and Awuzet; all three kebeles were in the Farta Woreda in the South Gondar Region. Selection was based on CARE having some level of presence in the kebele, for either a past or present project. Selection of the informants was conducted randomly once in the kebele. All six data collectors started in the center of the kebele, and walked outwards in different directions. One they reached a home, they were to skip every other house to find respondents, until they had reached their day's quota or the day was ending. No more than one individual per household was interviewed. Informants were girls between the ages of 13 and 18. Both the informant and a parent gave oral consent for participation.

Research tools

Research was conducted with a variety of methods, including a survey, a free listing or ranking activity that took place in conjunction with the survey, and two focus group discussions (FGDs). The survey and free listing/ranking activities were conducted by one of six data collectors, young women selected from the local university, and were pilot tested in a community close to the CARE Debre Tabor office prior to data collection. All methods were conducted in Amharic, the language of the region.

Survey

The survey involved a series of questions aiming to collect the informants' basic demographic information, WASH conditions at home and school, and WASH-related preferences. The surveys were conducted in a private location and lasted approximately 30 minutes. All informants, with the exception of those in the FGDs, participated in the survey. In addition to the survey, informants participated in one of two activities: a free listing activity or a ranking activity. The complete English version of the survey is found in Appendix 1.

Free listing

The free-listing activity was conducted on the first day of data collection with 24 informants in the first kebele, Kollydengores. Each was asked a series of six questions and asked to list as many items as possible for each question. Questions dealt with items necessary for a happy and good life, causes of stress, and reasons for missing school. The

complete list of questions is found in Appendix 2. The data collectors were trained to probe the girls for an exhaustive list of items for each category. The survey was then administered after completion of the free-listing activity.

The items generated from the free-listing questions were entered into Microsoft Excel and analyzed for the eight or nine most frequent responses to each question. To ensure the study focus was addressed, one or two items related to water, sanitation, or hygiene were then added to each list, regardless of the number of times listed by the informants. Each item was then placed on an index card for the subsequent ranking activity. The items generated from this analysis and activity can be found in Table 1.

Ranking

The ranking activity, along with the survey, took place for the remaining portion of the study, and was conducted in all three kebeles (no informants who participated in the free listing activity in the first kebele participated in the ranking activity). Each data collector was given a set of 30 index cards: 10 items for each of the three questions. The data collector would nonlinearly lay out all of the index cards for the given question, emphasizing that they were not in any particular order. They would then have the informant rank the cards in order of importance. The data collector would then write down the order of the cards. This was done for all three questions, listed below.

The ranking questions:

1. What are the most important things for a girl to be happy and have a good life? (Happy/Good Life)
2. What are the biggest causes of stress for girls in your community? (Stress)
3. What are the main reasons a girl may be absent from school? (School)

Table 1. Items generated from free-listing activity and used in ranking activity (not listed in any order)

Happy/Good Life	Stress	School
Education	Early marriage	High work load at home
Holidays	High work load at home	Caring for a sick family member
Playing with friends	Sickness, family or self	Early marriage
Education materials	Abduction	School is too far away
Clothes and shoes	Drought/not enough water	Not interested in school
Good family income	Not having school materials	Girls' education is not important to family/community
Love from family	Bad marks at school	Family poverty
Food security	No clothes/shoes	Parents are absent/gone
Time to study	Death in family	No latrines or water at school*
Good hygiene	Menstruation*	Menstruation*

*Item not frequently nominated by informants, but added to the list for the ranking exercise in order to examine the research question related to water, sanitation, and hygiene.

Focus group discussions

In addition to the surveys and either a free listing or ranking activity, two focus group discussions were also conducted in the kebeles Burokatona and Awuzet. In each case, a kebele leader was informed of the FGD on the first day of data collection in that kebele. They were told to randomly select eight – 10 “normal” girls between the ages of 13 – 18 to participate in the FGD the next day. All informants and at least one parent or guardian gave oral consent to participate and to be recorded. The FGD was moderated by a female CARE staff member from the Debre Tabor office, and notes were taken by a local female social worker.

Questions focused on basic hygiene practices and preferences, and why the items used for the ranking question regarding causes of stress were considered stressful. The girls were also asked to design and draw their ideal latrine for girls. In addition, they were to list the most important components of these latrines and discuss ways that they themselves, and their communities, could work together to make these latrines a reality. All of the research tools used in this study can be found in the Appendix.

Analysis

The overall goal of data analysis from the free listing and ranking activities was to not only find the average rankings of each item, but also to determine the extent to which girls agree about which things are more stressful than others, causes for school absence, etc. If the majority shares the same opinions, we can conclude that there is a *consensus* of viewpoints among the girls. If opinions vary greatly among the research subjects, it is difficult to draw conclusions about the most important issues for girls in this community.

Analysis was conducted with Excel, EpiInfo, SAS and UCINET software. The average rankings of each ranking question were found using Excel. In addition, the ranking responses of each informant were analyzed for each question in the statistical analysis program, UCINET. For each question, it was determined what the overall “true answer” to the ranking was, as well as how much each informant agreed. From these results, we are able to see the order of importance of all three questions, as well as the general agreement.

Results

Informant Demographics

In total, 156 surveys were completed. The table below depicts the basic demographic information of the survey population.

Table 2. Basic demographic information of informants

Average age (SD*)	15 (1.71)
Percent who have begun menstruating	44%
Average age at first menstruation (SD)	15 (1.73)
Percent in school	95%
Highest grade obtained	6 th (All girls between 2 nd – 11 th grades)

*Standard deviation

Water access conditions

Out of the 156 girls surveyed, only 3 were not involved in the collection of their family's water supply. Of these 99% involved in water collection, 64% of the informants were the primary person responsible for collecting their family's water; nine percent of the informants' sisters and 27% of the informants' mothers were the primary person responsible for collecting the family's water supply. Importantly, none of the respondents listed a male family member as involved in water collection; the burden of water collection was only placed upon the females in the family.

Distance to the primary water source was measured in the amount of time spent traveling roundtrip, to the source and back. This distance varied greatly among the informants, and was oftentimes different for the rainy and dry seasons. The following bar graphs depict the amount of time spent traveling to the primary water source by kebele, during the dry and rainy seasons.

Figure 1. Dry season: Number of minutes spent traveling to primary water source in three

kebeles

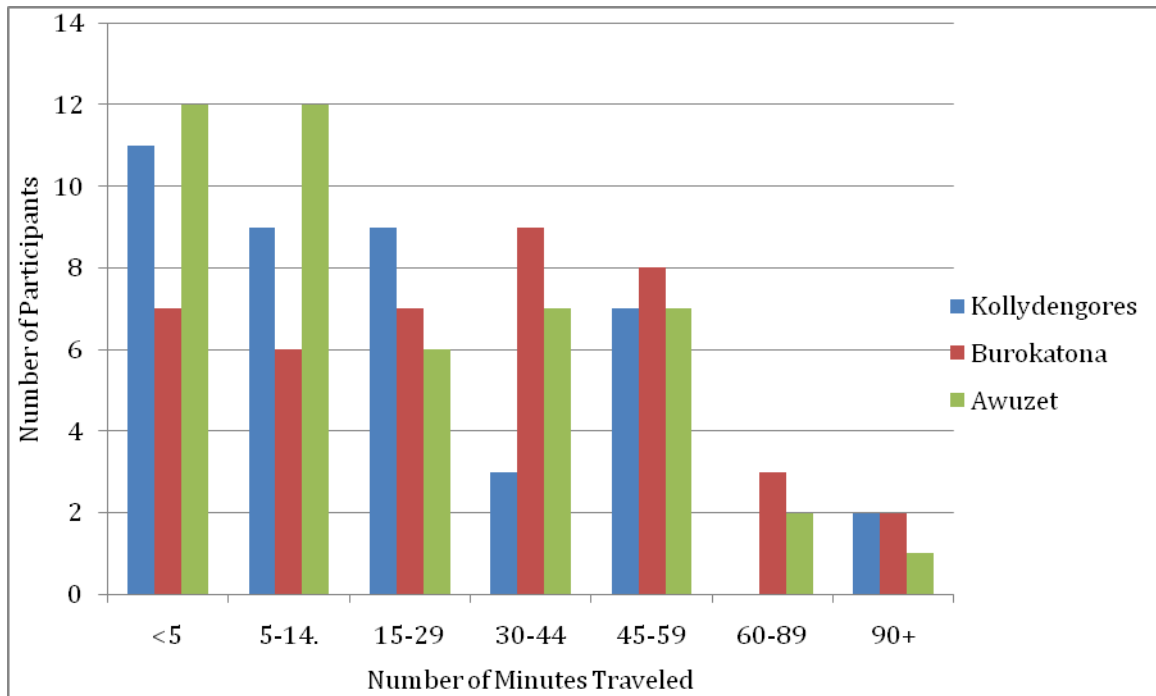
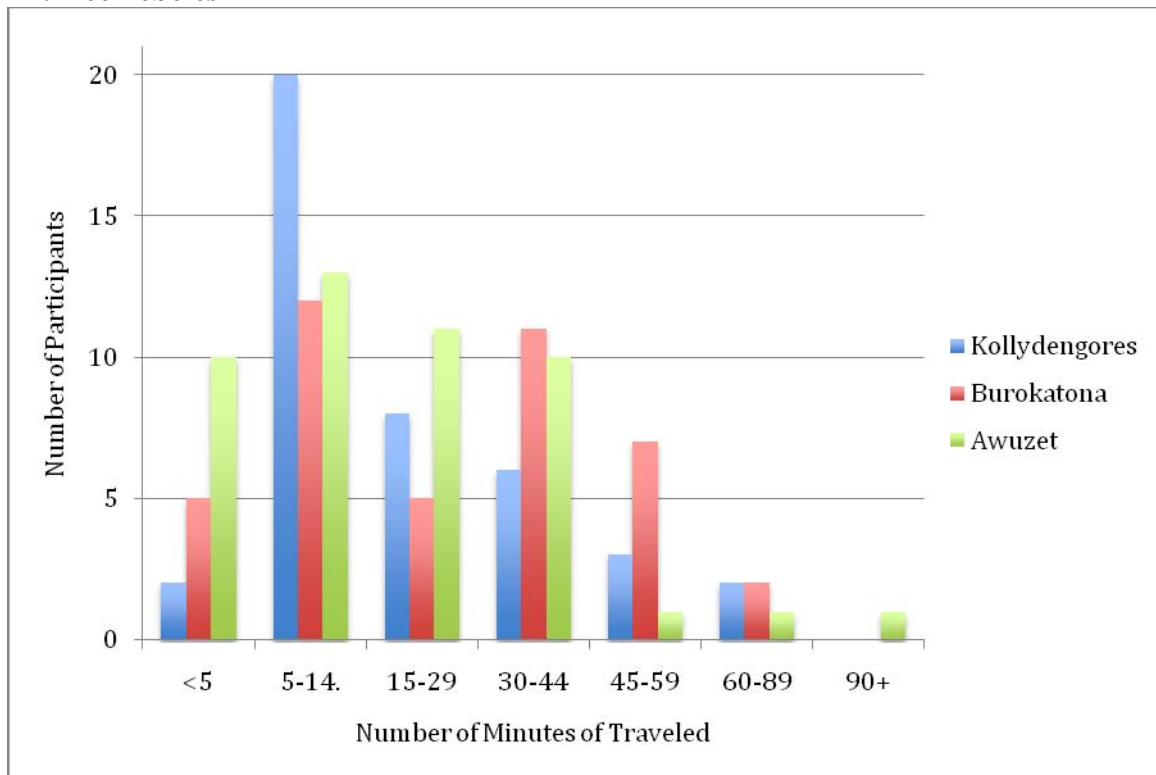


Figure 2. Rainy season: Number of minutes spent traveling to primary water source in three kebeles



The data in this graph can be deceiving, however, since this is only for the primary water source. When the primary source is insufficient, due to a lack of water or lack of safe

water, those responsible for water collection must travel further to a different water source, adding to the time and burden already spent. Because of the time spent collecting water, 38% of girls involved in water collection had been late for school in the last 30 days. Of this 38%, 35% said it was a “large problem.”

In addition to the time spent collecting water, the girls responded to a question about problems that might occur during water collection. The problems that were reported can be divided into two primary categories: Water Problems and Social Problems.

Table 3. Water and social problems faced while collecting water

Water Problems	Social Problems
Shortage of water	Fighting with Others
Long lines (lead to missing school, other chores or meals)	Harassment, especially from young men and dogs
Unsafe or dirty water	Fatigue
Broken pots	Bad and Painful roads (most informants go barefoot)

Additionally, 36% of those surveyed responded that there are times where their family does not have enough water to meet their basic needs. When there was not enough water available, a variety of methods were utilized to help alleviate the problem, namely: limiting water use for drinking, hygiene and household activities, borrowing from a neighbor or the community, using water from a stream or river (even though it was recognized this water may not be safe or clean) or fetching water from an even further source.

Those who reported times of not having enough water were asked what they would do differently if water were plentiful. Responses included: maintain better personal hygiene, plant more vegetables for family consumption and profit, wash clothes and utensils more frequently, and use more water for the cattle or household chores.

Home Hygiene Conditions

In regard to hygiene at home, approximately 83% of informants surveyed said they had a latrine at their home. Eighty-six percent of the informants said they always use the latrine at home; 12% said they use it infrequently; 2% said they never use the latrine at home. Around 23% of informants said they postponed urinating or defecating in the past 30 days because there was not a convenient place to do so.

Reasons for not using the latrine at home included: too dirty/smelly, the latrine was full, it was too risky or dangerous, they were afraid someone may see them, it was too far away, and other reasons. The frequency of these items can be found in the following table.

Table 4. Reasons for not using home latrine, percentages*

Reason	Percentage
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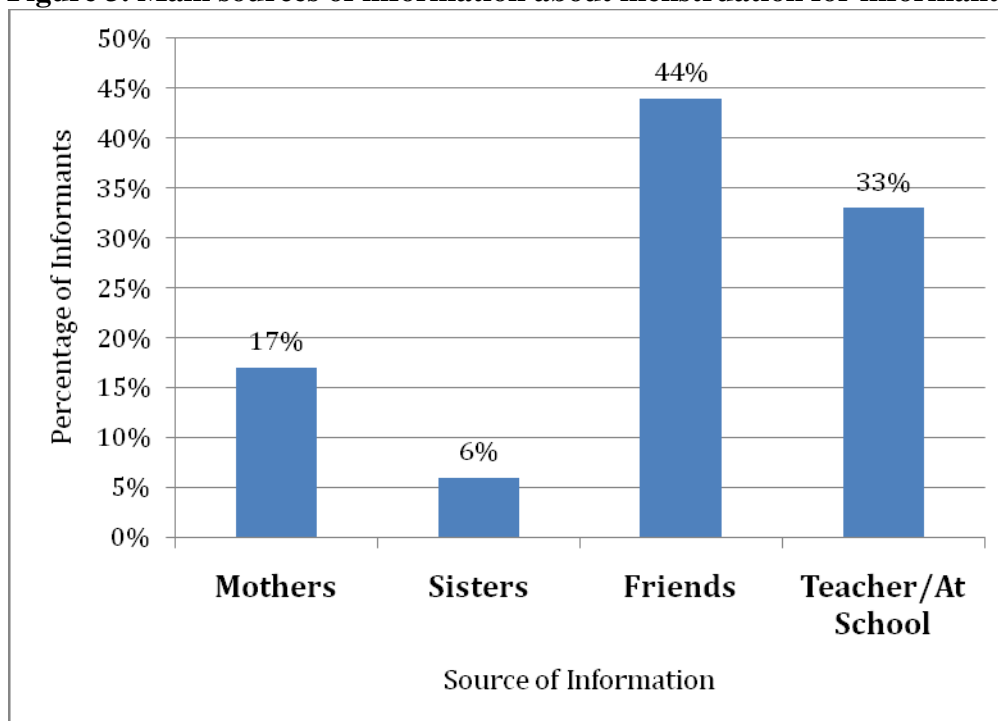
Dirty/Smelly	11.5%
Full	6.3%
Risky/Dangerous	7.0%
Afraid to be seen	14.8%
Far away	8.6%
Other	7 responses: snakes, bad road during rainy season, hyenas, long line, rain leaks in, no door on latrine, used other place

*Based only on girls who reported having a latrine at home (n=128)

Menstruation

As stated previously, 44% of the informants had reached menarche (the onset of first menstruation) at the time of the survey; the mean age at menarche was 15 (standard deviation of 1.73). Information about menstruation came from a number of sources, as represented in the following graph. These data show that most girls learn about menstruation from their friends or teachers, and many mothers are not having conversations with their daughters about this topic.

Figure 3. Main sources of information about menstruation for informants



Perhaps the most poignant finding in the study regarding menstruation was the amount of times it was cited to be a source of shame, fear and stress to the informants. Many of the informants expressed a great fear in people learning that they were menstruating. This fear and stress was so great, that it made it difficult to concentrate in class and disrupted their learning. In addition to fear, shame and stress, other problems associated with

menstruation at home or at school included: fatigue – with an inability to complete school or home chores, family isolation, irritability and fights, and harassment, especially from male peers. These findings came from the survey and the FGDs.

In regard to the products that girls commonly use for managing menstruation, 61.5% of those who had reached menarche stated that they only used underwear. Thirty-one percent of informants said they used reusable cloth, while the rest stated that they either did not use any products, or that they would wear long pants under their skirts for management. The majority of respondents purchased these items themselves at the market (61.3%).

When asked what they would *prefer* to use for managing menstruation, only underwear was listed 65 times as the most common preferred method, representing 74.7% of the responses (respondents were able to choose more than one answer). Reusable cloth was listed 18 times, making it 20.7% of the responses, and disposable pads were listed only 4 times, as 4.6% of the responses. This question, however, does not reflect the level of knowledge of available products for menstrual management. Unofficial conversations with the CARE staff and enumerators implied that many girls were unaware of their options, including sanitary pads.

School Hygiene Conditions

In general, school hygiene in the selected kebeles is in a bad state. The majority of the informants in school, approximately 94%, claimed that their school had a latrine that girls could use. However, 45% of those surveyed did not feel comfortable using the latrine. Many reasons were cited for this discomfort, mainly: they were not used to using the type of latrine at school, it was too dirty, it smelled bad, there were too many people and there was no privacy. In addition to the problems with the latrine, 78% of those surveyed said that there was no washbasin present at their school. Only 24% of the girls surveyed said they always use the latrine at school when necessary.

Of those who had reached menarche, 90% of girls said that their school did not have a place to adequately maintain their hygiene while menstruating. As will be shown later, menstruation and not having water at school are not high among the list as to why a girl may be absent from school, however, of those surveyed who had reached menarche, at least 43% had missed school due to menstruation.

Table 5. Summary statistics on school hygiene conditions

Hygiene Issue	n*	Percent
Reports that school has girls' latrine	146	93.8
Feels comfortable using latrine	136	55.1
Reports presence of washbasin at school	126	8.7
Uses latrine:	132	
Always		24.2
Sometimes		40.2
Never		35.6
Reports having a place to maintain hygiene at school while menstruating	68	10
Missed school due to menstruation	39	43

* Number of people who responded to question

Table 6. Reasons listed for not feeling comfortable using school latrine*

Reason	Percent	Reason	Percent
Not used to using	44.26%	Smells bad	40.98%
Dirty	24.59%	Flies	9.84%
Scary/too dark	6.56%	Fear getting sick	1.64%
Too many people	22.95%	No privacy	37.70%
Might Get hurt	1.64%	Too far	4.92%
No water	6.56%	Other	4.92%

*Percentages based on only girls who answered that they did not feel comfortable using latrine (n = 61)

Consensus Analysis and Average Ranks

Each of the ranking questions was assessed to determine whether there was consensus, or agreement, between girls in their responses. This analysis was done among all respondents, and then it was done separately based on menarcheal status: one analysis only for girls who had begun menstruating and one for only girls who have not yet begun menstruating. This separate analysis was done due to the hypothesis that perceptions and experiences might be different for girls once they reach puberty.

There was only consensus among post-menarche informants for the first question, "What are the most important items for a girl to have a happy and good life?" Cleanliness, as the WASH-related item, was ranked as the sixth most important item by the total group, ranking fifth for the pre-menarche girls and seventh for the post-menarche. All three ranking analyses showed similar results in the order of importance of these items; yet, based on the results of the analysis, there was no general agreement among the informants for this particular order.

No consensus was reached for causes of stress. Drought was ranked as third for the pre-menarche girls and fifth by the post-menarche. Menstruation was also ranked higher among the pre-menarche girls, seventh, than the post-menarche girls (ninth); it was ranked eighth when considering all informants.

Reasons why a girl may miss school also lacked consensus. Alarming, early marriage is at the top of this list, in addition to being the second listed for causes of stress.

Menstruation and no water at school, the two items added to the ranking activity for the purpose of the study, were ranked very low - ninth and tenth, respectively. The results of the consensus analysis can be found in Appendix 4.

The following table represents the average rankings for all three questions, using the responses of all the informants. The averages were found using excel.

Table 7. Mean rank of items assigned by all informants for all three questions

Most important things for a girl to be happy and have a good life			Biggest causes of stress for girls in your community			Main reasons a girl may be absent from school		
Rank order	Item	Mean (SD)	Rank order	Item	Mean (SD)	Rank order	Item	Mean (SD)
1	Love from family	3.67 (2.54)	1	Early Marriage	3.89 (2.34)	1	Early Marriage	3.74 (2.71)
2	An education	4.19 (2.79)	2	Death in family	4.24 (3.06)	2	Absent parents	4.13 (2.31)
3	Being in good health	4.26 (2.64)	3	Sickness for self or family	4.62 (2.59)	3	Heavy work load at home	4.60 (2.67)
4	Good hygiene	5.02 (2.21)	4	Drought	4.91 (2.77)	4	Family poverty	4.51 (2.49)
5	Have enough food	5.13 (2.67)	5	Abduction	4.95 (2.65)	5	Not important to family	4.86 (2.75)
6	Time to study	5.27 (2.79)	6	Making bad grades	5.80 (2.64)	6	Not interested in school	6.13 (2.72)
7	Good family income	5.65 (2.42)	7	Having school materials	5.95 (2.46)	7	Most care for others	6.34 (2.60)
8	Time to play with friends	7.08 (2.72)	8	Work load at home	6.17 (2.74)	8	Menstruation*	6.54 (2.82)
9	Having clothes	7.08 (2.58)	9	Menstruation*	6.83 (2.60)	9	School is too far away	6.75 (2.45)
10	Holidays	7.71 (2.34)	10	Having clothes	7.65 (2.61)	10	No water at school*	7.39 (2.62)

*Item not frequently nominated by informants in free lists, but added to the list for the ranking exercise in order to examine the research question related to water, sanitation, and hygiene.

The mean rank order did not alter much when assessed by looking at girls who had reached menarche and those who had not separately. Appendix 5 shows the mean rank order for all three questions stratified by menarcheal status.

Focus Group Discussions

The information collected from the focus group discussions supported the data from the surveys, perhaps even demonstrating more of an impact of WASH issues. Both FGDs reported heartily that girls frequently miss school due to water collection, and that water collection also creates fights within families; those in the FGDs stated that this is, in fact, a big problem in their lives.

The problems with the latrines at school echoed the problems expressed in the survey: they are dirty and smell bad, supplies (water, paper, etc) are not available, they feel shame when needing to use the latrine and there is insufficient privacy.

Many of the girls in the survey cited missing school while menstruating (at least 43%), however the FGDs shed some light as to why girls may miss school during menstruation. The informants mentioned not having proper hygiene products to maintain menstruation as a primary reason, as then they were too afraid of blood becoming visible and being mocked by their male peers. In agreement with the survey data, this fear is so great that it affects their ability to focus in class.

Something that did not often come up from the surveys, but did so in the FGDs, was the issue of latrine use during the day. The girls mentioned that there is currently a paradigm shift, in which it is becoming more acceptable for them to use the latrine during the day. However, many of the girls still stated that their parents, especially their mothers, and male peers would yell at them or mock them if they went to use the latrine during the day. Others mentioned that their mothers continued to ask them not to use the latrine during the day, justifying the request by saying it is not appropriate for girls or women to be seen using the latrine during the day time. This generational shift in female latrine use behaviors was also confirmed in FGDs with older women in South Gondar, which were conducted in November 2009.

Appendix 6 shows pictures drawn during the FGDs that represent the ideal latrine for the girls. As can be expected, it was emphasized that all of these latrines are separate from the boys' latrines. All contain water, paper, a trashcan and washbasin with soap for hand washing. Many of the latrines also contain a fetching cup and windows for ventilation; one group specifically wanted a shower connected to the latrines to further their personal hygiene.

Discussion

Through use of a survey, free listing and ranking activities, and focus group discussions, this study was able to better understand the degree to which water, sanitation or hygiene is a source of stress for girls, as well as some of the sources of stress within WASH-related issues. Nearly all of the study participants are involved in collecting water for their families, and many of those are the primary person responsible. The distance to the primary source of water varies greatly, but this daily chore has caused nearly 40% of the

informants to be late or absent from school in the 30 days preceding the survey. In addition to the time burden, the informants experienced other social and water-related problems while collecting water.

Short-answer responses to the survey and responses from the FGDs demonstrate clearly that menstruation is a cause of stress for the girls interviewed in South Gondar. For many, menstruation was associated with fear, stress and shame; oftentimes, this constant source of stress was so great that it interrupted learning, or caused the girl to miss school all together. However, when asked to rank the most important causes of stress and reasons to miss school for girls in South Gondar, menstruation was not highly ranked. Girls in this region are faced with other more stressful events, and face other barriers to attending school, including early marriage and poverty.

In addition, it is apparent that the hygiene situation at the schools needs to be improved. A large proportion of informants stated that, for various reasons, they did not feel comfortable using the latrines at school; over 90% said that there was no washbasin present to wash their hands at school. For girls who had reached menarche, 90% said that their school did not have a place to adequately maintain hygiene while menstruating.

Based on these results, it is safe to conclude that WASH-related issues are a cause of stress and barrier to attending school for adolescent girls in, especially issues pertaining to menstrual management, but there are many other causes of stress and barriers to education facing girls in South Gondar, Ethiopia.

Recommendations

The data show that there are a number of issues potentially preventing adolescent girls in South Gondar from attending school or living the life that they would prefer. Many of these issues are large, culturally engrained issues that have developed over generations – especially in regard to the importance of early marriage and the comparatively low priority of girls' education. However, in the spirit of pragmatic idealism, there are plenty of opportunities - small and large - to make a big change.

Working to provide improved private spaces and materials for hygiene and sanitation at school would be a welcomed intervention opportunity. As expressed in both the surveys and the FGDs, privacy is of utmost importance for the latrines at schools; there is a need to separate the boys' and girls' latrines. When asked how to improve the latrines at school, one of the FGD groups proposed the idea of tea and hygiene clubs to be started at the school. The tea club was proposed as an idea to generate funding (other ideas included a school-run garden) so that a hygiene club would have the necessary funds to keep the latrines stocked with necessary supplies (listed as water, paper and female sanitary products) and to have someone responsible for the latrine's upkeep and cleanliness.

Another responsibility of the hygiene club, or a specific and qualified individual, would be to provide education and educational materials on puberty, especially menarche, to

both the boys and girls at school. The girls in the FGDs articulated a belief that harassment from male students would decline if they were better educated on menstruation and puberty in general. Since only 17% of the girls learned about menstruation from their mothers, it could be beneficial for the girls in physical and emotional support to have their mothers involved in the education process.

Further supporting the need for separate latrines and a party responsible for the maintenance of the latrines, other groups suggested that the community build the latrines for the schools, and that the students were responsible for keeping them clean. To avoid stigma and unfair treatment, however, it is important that the individual, or group of individuals, responsible, rotates among the students and includes everyone.

Future Analysis

In the next few weeks and months, additional topics will be explored in analysis, including a regression analysis to see if there are predictive factors for the girls who had negative competency scores during the consensus analysis. The competency scores are the individual scores given to each participant during the course of analysis to assess how well their ranking “agrees” with the “true” answer; those with negative scores had ranks that varied greatly from the norm. Additional consensus analysis will also be done to stratify results by kebele and also to examine results excluding girls with the negative competency scores. A greater literature review will also be conducted, allowing us to better place this research in the context of current studies. Other suggestions of questions to be explored using this data are welcome.

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