



Expanding Access to Menstrual Hygiene Products for Adolescent Girls and Young Women in Ethiopia

Table of Contents

<i>Acknowledgements</i>	3
<i>Executive Summary</i>	4
<i>Methodology</i>	6
<i>Overview of Use and Need for MHM products in Ethiopia</i>	7
<i>Ethiopia Commercial MHM Market Insights</i>	8
<i>Ethiopia Consumer MHM Journey Insights</i>	11
• <i>Awareness</i>	12
• <i>Access or Purchase</i>	13
• <i>Use</i>	17
• <i>Disposal</i>	19
<i>Recommendations</i>	21
• <i>Include menstrual health within adolescent, sexual and reproductive health, and gender equity programs</i>	21
• <i>Tip the calculus for rural markets.</i>	22
• <i>Give AGYW the products they want, from where they they want to get it.</i>	23
• <i>Access is not enough. Support AGYW through their entire MHM journey.</i>	24
• <i>Facilitate coordination between commercial actors and the public sector.</i>	25
<i>Annex</i>	27
• <i>Commercial Market Product Breadth</i>	27
• <i>List of Stakeholder Organizations Interviewed</i>	28
• <i>Discrete Choice Experiment and Household Survey</i>	29
• <i>Demographic Characteristics of AGYW Recruited for the DCE from Rural and Urban Ethiopia</i>	30
• <i>Product Attributes and Levels Tested during the Discrete Choice Experiments</i>	31
<i>References</i>	33

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About PSI

PSI is a global health network of more than 60 local organizations dedicated to making it easier for people in the developing world to lead healthier lives and plan families they desire by marketing affordable products and services. PSI works to develop health markets to ensure that all people have the products and services they need without suffering financial hardship. Learn more at www.psi.org

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Executive Summary

Menstruation is a monthly challenge for billions of girls and women worldwide. On any given day, more than 300 million girls and women are menstruatingⁱ. In many low-income and middle-income countries, access to sanitary products such as pads, tampons, or cups is limited, and girls often resort to using strips of cloth and other proxy materials to try to absorb their menstrual flow. In Ethiopia, qualitative research suggests that women and girls experience shame, fear, decreased mobility, embarrassment, discomfort during menstruation because they lack access to affordable and preferred products, private and safe facilities, and education about menstruation.ⁱⁱ


Menstrual hygiene interventions are complex and involve a number of critical components,ⁱⁱⁱ including access to knowledge, access to products, access to water, sanitation, and hygiene (WSH) services, and improved social norms. This report focuses on access to products in Ethiopia. It highlights current patterns of product use from Ethiopia's recent PMA2020 survey, provides a brief summary of the structure of the market for commercial products, summarizes findings from consumer research conducted with adolescent girls and young women (AGYW) age 13-24 in urban Addis Ababa, peri-urban Sendafa, and rural Yetnora and Gohatsion along the consumer MHM journey, and recommends a set of actions to increase access to the products that are preferred by AGYW.

An estimated 24.1 million girls and women of reproductive age (WRA; 15-50 years)¹ in Ethiopia are in need of menstrual hygiene products^{iv}; 45% of WRA report use of commercial products and only 28% report having everything they need to manage their menstruation. Adolescent girls are more likely to report use of sanitary pads, with 49% of rural and 86% of urban adolescents reporting the use of sanitary pads.

The commercial sanitary pad market in Ethiopia lacks quality differentiation and is dominated by two Chinese-owned brands. The current 230 million annual unit market has grown at an estimated 15% CAGR, and has the potential to grow to 7-9 billion annual units over time. However, significant market development is hindered by macroeconomic conditions that severely limit access to foreign currency in an entirely import-dependent sector. Additionally, despite 84% of Ethiopia's population residing in rural areas, approximately 80% of MHM product distribution has remained in urban areas. Uncertain of rural demand, manufacturers, importers, and the highly diggregated FMCG distributors of MHM commercial products have been reluctant to invest in rural MHM promotion or supply.

Within this commercial context, we strove to understand the consumer MHM journey (from awareness to access to use to disposal of MHM products), and the preferences, barriers, and influencers experienced at each step by different segments of AGYW. Our qualitative and quantitative research found that pre-menarche adolescent girls lack basic information about menstruation biology and MHM practices, due to failures in formal education systems and limiting social norms. Our research clearly indicates that all AGYW want higher quality MHM products. Urban girls have a stronger preference for commercial disposable sanitary pads; rural AGYW have a stated preference for reusable pads.

¹ PMA2020 information starts at age 15 years. At time of report, original datasets were not yet available for secondary analysis.



Although average willingness to pay (WTP) is higher than current market prices, affordability is still a significant issue for 30-40% of AGYW. Beyond product preferences and WTP, pad access is limited by inconsistent supply and social barriers to purchase products. The majority of AGYW use commercial pads. Mixed use is common: more reliable pads are saved for use outside the home, and exclusive pad use increases with wealth. Low access to clean water and private spaces to wash and change pads is a deterrent to use and restricts mobility outside the home. There are currently few waste facilities that support appropriate processing of MHM waste, making disposal a challenge.

A number of opportunities were identified to overcome these constraints and move towards a market where every AGYW has the means to manage her menstrual hygiene needs according to her own preferences, needs, and informed choice. These opportunities include:

- 1. Include menstrual health within adolescent, sexual and reproductive health, and gender equity programs.**
- 2. Tip the calculus for rural markets.**
- 3. Give AGYW the products they want, from where they they want to get it.**
- 4. Access is not enough. Support AGYW through their entire MHM journey.**
- 5. Facilitate coordination between commercial actors and the public sector.**

Investing in these opportunities can help catalyze a sustainable market for menstrual hygiene products and increase access for millions of AGYW across Ethiopia.

Methodology

With funding from the Bill and Melinda Gates Foundation (BMGF), Population Services International conducted research to understand consumer preferences and market failures for menstrual hygiene management (MHM) products in Ethiopia and India. This document summarizes the findings from the research in Ethiopia which consisted of five elements:

- **A review of research literature and market data:** Using data from commercial providers, academic literature, secondary data sources and interviews with market players, PSI built an understanding of key market trends, the depth and breadth of the market and gaps in the use of commercial products.
- **Human Centered Design (HCD) qualitative research:** Building upon a review of the market data, PSI interviewed 86 respondents, including school girls (13-17), young women (18-24), household and community influencers and product providers. Research was conducted in two regions of Ethiopia, Addis Ababa (capital city) and Sendafa (peri-urban nearest to Addis Ababa).
- **Discrete Choice Experiment (DCE) quantitative research:** In addition to the qualitative research, PSI conducted a discrete choice experiment (DCE), in which 1,499 girls and young women in urban, peri-urban and rural areas were surveyed on their current use of MHM products and their preferences for various attributes including price, quality, purchase location, etc. 890 respondents in urban Addis Ababa and peri-urban Sendafa and 609 respondents in rural Yetnora and Gohatsion were interviewed for this DCE research. The broad objectives of the two pieces of research included building an understanding of barriers to adoption of commercial MHM products among girls and women; key influencers relevant to MHM product choices; and product preferences.
- **Interviews with key stakeholders:** PSI conducted semi-structured interviews with 5 manufacturers (3 disposable and 2 reusable), 3 importers (disposable), 8 distributors and wholesalers, 40-50 retailers, 5 government stakeholders and 3 non-governmental stakeholders (see Annex 2 for a full list of interviewees). Interviews were recorded, transcribed and coded for analysis. Interviews aimed to explore the business models of key players and the challenges faced in serving AGYW. Interviews with retailers and distributors were conducted in Addis Ababa Merkato (largest national wholesale market) and other outlets, Sendafa, Shire, Bishoftu and Arbaminch to understand product availability in different areas.
- **Facilitated workshops:** PSI first conducted an internal workshop with members of the PSI marketing, research, reproductive health, and WASH teams to bring the various streams of research into one picture. This was followed by a second workshop with external stakeholders, including the MOH, UNICEF, Ethiopian Standard Agency (ESA), commercial manufacturers and importers of MHM products, to validate findings, develop a common vision for a healthy MHM market ecosystem, and begin developing a roadmap with interventions to get there.

Overview of Use and Need for menstrual hygiene products in Ethiopia

There are 24.1 million women and girls of reproductive age (15-49 years) in Ethiopia, all of whom have a need to manage their menstrual hygiene. There is no consistent standard of what should or should not be used when it comes to MHM products. The government of Ethiopia has not defined quality menstrual hygiene management practices or products. For our purposes, we have defined use of MHM products as use of disposable sanitary pads, reusable sanitary pads, and improvised homemade products, including cloth scraps. In a review of research studies, the use of disposable sanitary pads is generally considered a good hygiene practice while reusable cloths were considered bad practice when compared with disposable pads in some studies, but considered as good MHM when they were washed hygienically and dried in the sun^v.

According to PMA2020^{vi}, approximately 45% of women and girls age 15-49 report using disposable sanitary pads, and 53% of women and girls report using cloths. The use of disposable sanitary pads is more common amongst adolescent girls as compared to adult women (49% for adolescent girls versus 24% of older women)^{vii}. Use of disposable sanitary pads amongst adolescent girls is higher in urban areas (85.9%) than in rural non-pastoralists (49%)^{viii}. However, taking into account both products and facility environment for MHM, PMA 2020ⁱⁱ found that only 28% of women in Ethiopia report having everything they need to manage their menstruation, with no variability across age.

Further research is needed on the impact of menstrual hygiene practices on girls' and women's health and education^{ix}. A 2013 review on the health impacts of menstrual hygiene practices found that half of the 14 included studies demonstrated an association between poor MHM and reproductive tract infections, but the associations were generally weak^x. A 2016 systematic review^{xi} aimed at determining if MHM interventions improved education and psychosocial impacts for women and girls found no significant impact of sanitary pad provision on absenteeism. Qualitative studies with girls indicate that girls feel more comfortable when using better-quality menstrual products because they do not worry as much about leaks and stains.

Ethiopia Commercial MHM Market Insights

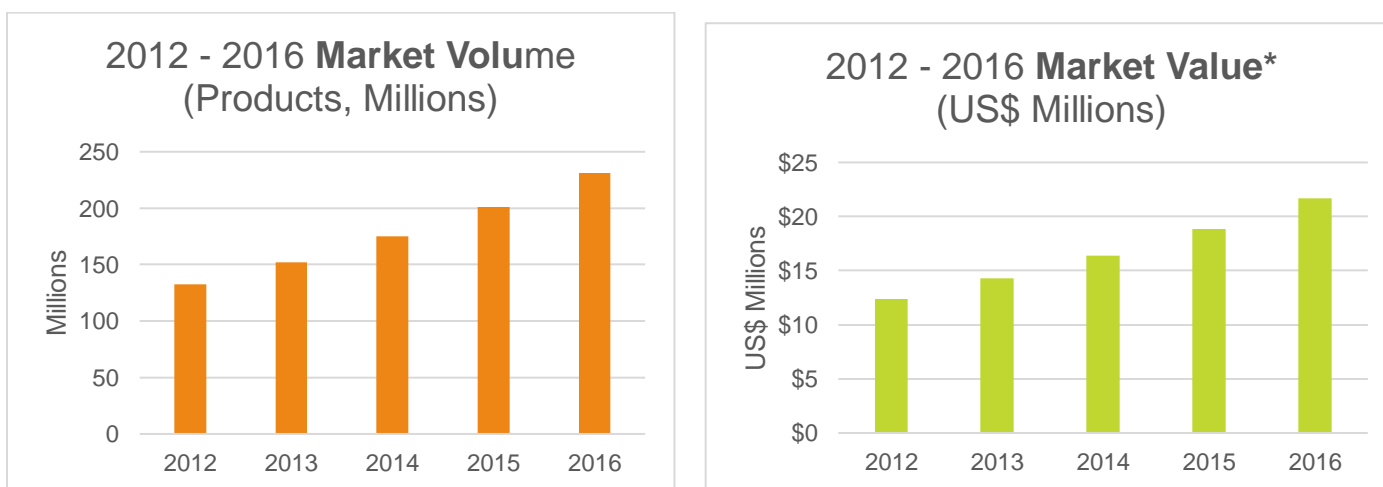
At a glance...

- **Top two brands**, Comfort (Chinese company, imported) and Eve (Chinese company, manufactured in Ethiopia), **account for nearly 90%** sales. Thirteen additional brands identified.
- **90% of market in Addis and major cities**; limited coverage in rural areas.
- Pricing consistent around **ETB 20/pack of 10 (US\$ 0.87)**.
- **US\$ 21.7 million market** (230 million units) in 2016 and **growing at 15% volume CAGR**
- **Could grow to 7- 9 billion pads or US\$ 600 million market**, if per capita consumption matches US/Europe/China as incomes increase.

Undifferentiated market dominated by two sanitary pads

The current commercial market for menstrual hygiene products was estimated at 230 million units (valued at US\$ 21.7 million market) in 2016 and growing at 15% volume CAGR. Top two brands, Comfort (Chinese imported) and Eve (Chinese owned, manufactured in Ethiopia), account for nearly 90% sales. Thirteen additional brands were identified (see Annex 1). Overall the commercial disposable sanitary pad brands are dominated by imports of either finished products or the raw materials for domestic manufacture. Reusable pads are estimated at less than 0.5% of total market volume in 2016, and are primarily manufactured by small enterprises and women groups. Over 90% of these reusable products are 100% subsidized and distributed by non-profit organizations to school girls and refugees.

Fig. 1: Ethiopia MHM product market total volume and value



Source: PSI Analysis and interviews with manufacturers and distributors

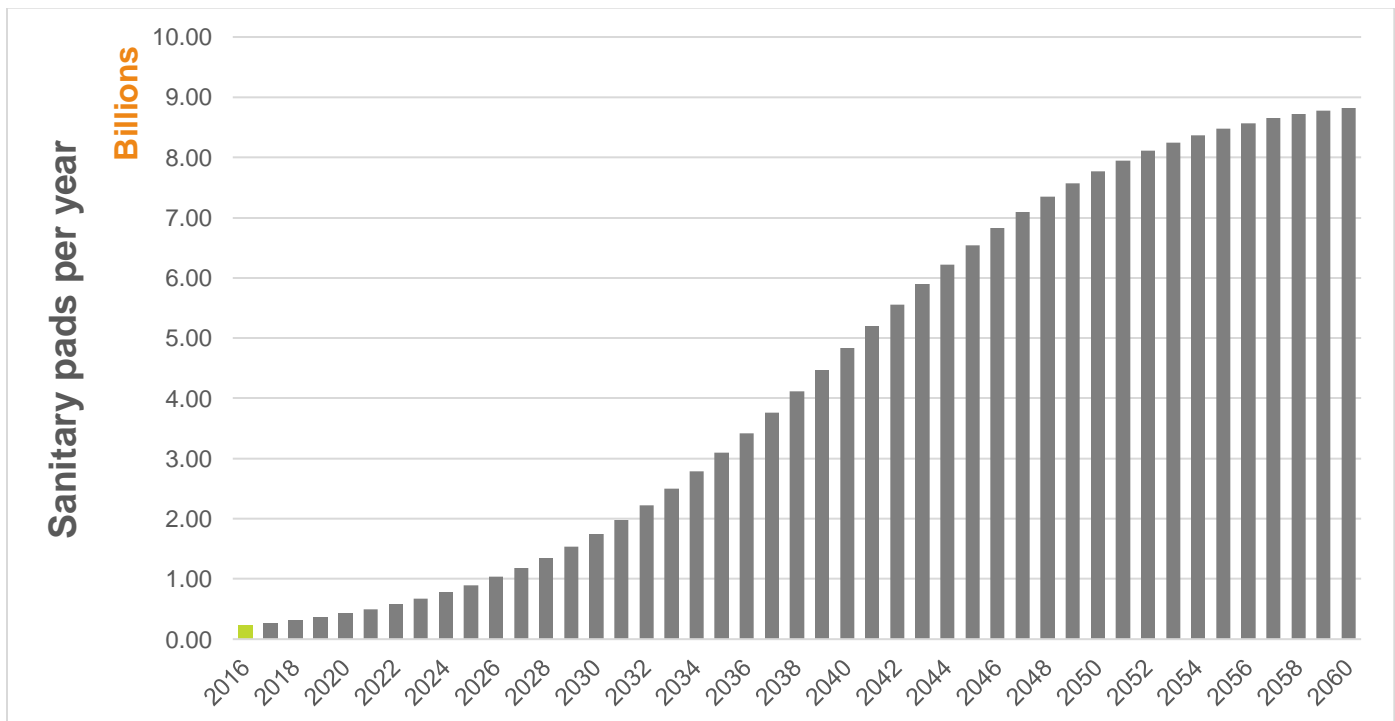
*Value calculated using consumer price; products distributed free to consumers register as US\$0.

The majority of sanitary pad products are sold in packs of 10 for approximately 20ETB (US\$0.87). A few products are available in packs of 4, 7, or 8, and the most expensive imported disposable pad averages 4 ETB per pad. Despite the number of brands on the market, disposable sanitary pad products appear to have little quality differentiation. As mentioned above, the majority of reusable pads are distributed for free to target groups, while approximately 5-10% of these products are sold for 15 ETB in the marketplace.

Potential to grow


Based on international trends in consumer preferences and market growth, the Ethiopian market could eventually grow to 7-9 Billion MHM product units per year. This would represent an increase from an average annual use of 9 units per woman of reproductive age (WRA) per year to approximately 310 units per WRA per year, in line with current consumption rates in the US and China. This market size estimation also assumes economic growth continues and follows a similar trajectory to India.

Fig. 2: Ethiopia MHM potential market size estimation



Rural need/ urban supply

The availability and use of commercial products varies significantly across rural and urban areas. Despite 84% of Ethiopia's population living in rural areas, approximately 80% of the commercial market is limited to Addis Ababa, with limited to no coverage in rural areas. Majority of disposable sanitary



pads are distributed in major cities and larger regional towns targeting urban women with disposable income. Although some products are distributed directly from manufacturers and importers to supermarkets and pharmacy chains, the majority of disposable pads are distributed through highly disaggregated supply chains of fast moving consumer good (FMCG) dominated by Mercato wholesalers and dispersed retail outlets. Outlets in peri-urban and rural contexts that rarely stock these disposable pads cited that their customers had low awareness of or capacity to pay for such products.

Lack of access to foreign currency results in severe stock outs of MHM products.

Ninety-nine percent of commercial MHM products in Ethiopia are reliant on importation, through either raw materials for manufacture in country or finished goods. Current macroeconomic conditions, including a declining currency value and import/export imbalance, impede local manufacturers and importers from accessing hard currencies such as the United States Dollar. Without access to foreign currency, these actors are forced to severely limit production and importation, resulting in stock-out rates for many MHM products of up to 40% of the year.

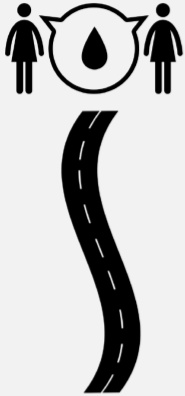
In these conditions, supply cannot meet demand. Our research indicates that latent, unmet demand for MHM products of around 30% exists in this market. However, unless this constraint is resolved or circumvented, commercial manufacturers and importers have no incentive to push towards increasing the size of the market through promotion and distribution expansion.

This constraint has a direct and dramatic effect on the accessibility of MHM products at the access/use step of the consumer journey for all girls and young women in Ethiopia.



MHM CONSUMER JOURNEY OF ADOLESCENT GIRLS & YOUNG WOMEN

AWARENESS



PRE-MENARCHE

- AG lack (and desire more) adequate and quality information on:
 1. biology and experience of menstruation,
 2. age of menarche and
 3. proper management, including MHM options, where to access products, how to use and dispose products, and pain management

MENARCHE



- Girls are shocked upon menarche and often feel conflicted whether to disclose or withhold their menarche experience
- AG/YW lack a clear focal point/ source of information & internet use is not common for MHM

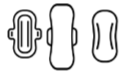
KEY INFLUENCERS & BARRIERS

- **Mothers, health extension workers and teachers** often fail to discuss MHM due to shame, secrecy and norms around menstruation
- Common **incorrect belief that normal age of menarche is 15-16** further delays MHM discussion to post-menarche
- MH policy was launched 2017, but is **not yet considered a public health priority** by government ministries
- **High cost of promotion and unknown ROI** deters market actors from promoting sanitary pads beyond urban areas

ACCESS / PURCHASE



MHM PRODUCTS



- **Strong preference for commercial disposable pads** among AG/YW; citing convenience and reliability
- Low brand loyalty
- Desire for greater quality & variety of product features, including absorbency, stickiness to underwear, bulk & combo packs, durable wrapper & wipes

SOURCE

- Limited distribution of free disposable & locally-made reusable pads in schools; some girls trade or sell free disposable pads for commercial pads
- Girls are uncomfortable purchasing products from or around men
- AG/YW prefer to obtain pads from female shopkeepers; pharmacies, and supermarkets are more trusted outlets in urban areas

KEY INFLUENCERS & BARRIERS

- Some older family members don't value sanitary pads as basic necessities and **limit household funds** allocated to purchase MHM products
- **Men and boys are ignorant of MHM**, associating it with sexual activity and frequently harass AG/YW in market areas
- Access is limited by **low distribution to rural areas** and **frequent stock-outs** due to severe shortages of foreign currency needed to import products and pad raw materials
- **No national quality standards** exist yet for MHM products (currently in draft form)

USE



MIXED-USE

- Mixed use strategy is common, with AG/YW using **homemade cloth solutions at home and saving commercial pads for use at school or work**
- Commercial pad use increases with increase in and greater control of household income



- Fear of leakage, pain and lack of private space to change pads affects mobility during menstruation

KEY INFLUENCERS & BARRIERS

- **Low access to clean water and private space** to wash and dry reusable pads is a deterrent to use
- Most **schools lack appropriate facilities** (water and private toilets with lockable doors) to change sanitary pads

DISPOSAL



SITE



- Toilets, rivers, fields and trash cans are common disposal places;

- Wrappers of pads are often transparent and thin, making discrete disposal difficult
- Lack of biodegradable product options leads to concerns around environmental effects as disposable product use increases

KEY INFLUENCERS & BARRIERS

- **Few waste management systems**, when they are present at all, **are able to process used MHM products**
- Most **schools lack appropriate facilities** for disposal

Ethiopian AGYW Consumer Journey Insights

A healthy behavior, such as the use of menstrual hygiene products, can best be understood as part of a consumer journey experience made up of a series of decisions and actions before, during, and after the desired behavior. The preferences, ability, and motivation of adolescent girls and young women to take the steps on this consumer journey may be aided or hindered by external influencers- such as family, community members, or social norms- or barriers resulting from the market or infrastructure- such as product availability or disposal facilities. By framing our analysis around the consumer journey, we were able to understand the core of the AGYW's experience and key influencers and barriers at each step. Key findings are summarized in the infographic and detailed in the section below.

AWARENESS

Pre-menarche adolescent girls lack basic information about menstruation biology and MHM practices, due to failures in formal education systems and limiting social norms.

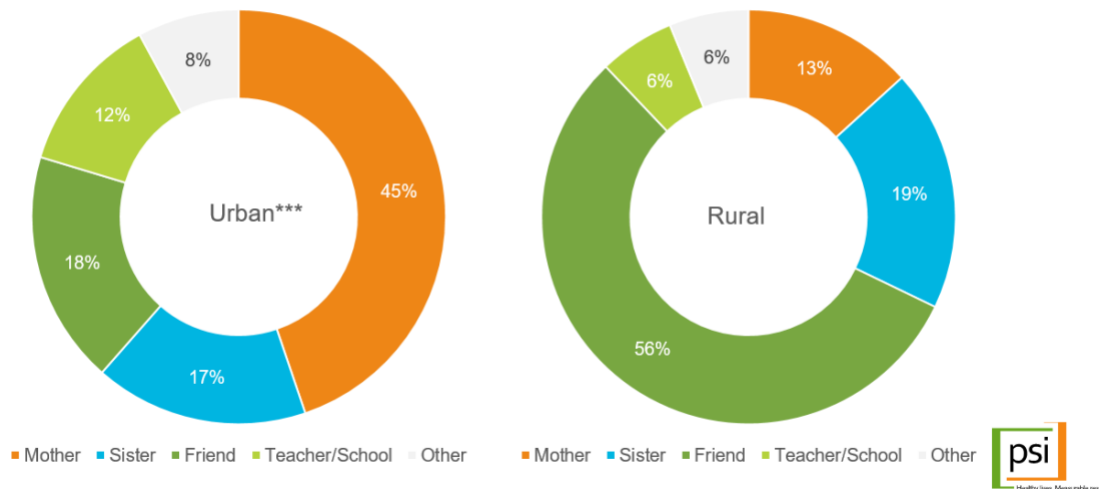
Consistent with previous research, our study found all girls lack awareness about menstruation and MHM before menarche. Because of this, they are often shocked upon menarche and feel conflicted whether to disclose or withhold their menarche experience. They have no clear focal point/source of information when it comes to menstrual hygiene information and internet use is not common. Pre-menarche girls, especially those living in rural areas, desire quality information on biology, age of menarche and proper menstruation management, including MHM options, where to access products, how to use and dispose of products and how to manage pain. Mothers, health extension workers and teachers often fail to discuss MHM due to shame, secrecy and norms around menstruation. In addition to this, there is a common misconception that the normal age of menarche is 15-16, which further delays MHM discussions until post-menarche.

“Met a girl who was crying. She was menstruating but afraid to tell mother because she would think she had intercourse.”1/FG.

“There was a girl in community whose period came at 11. This was not seen as normal by the community.” 1/FG

Fig. 3: Reported most trusted source of mhm information by rural and urban AGYW

Most Trusted Source of MHM Information



Public awareness about the importance and availability of quality sanitary pads has been hindered by lack of government policy priority and high promotion costs. The UNICEF 2016 studyⁱⁱⁱ indicated that more than 52% adolescent girls did not ever receive information about menstrual hygiene. Key market players such as manufacturers, importers, distributors, wholesalers and retailers widely complained that there is a lack of support from the government to incentivize promotion by prioritizing menstrual hygiene as a key national health concern. UNICEF is a key driver in the national MHM agenda, leading national and comprehensive research on MHM knowledge, attitude and practice, piloting projects across regions, establishing small scale manufacturers, and advocating for the development of national MHM Standards and National MHM Policy Guideline with Ethiopian Standards Agency and Ministry of Health respectively. A Menstrual Hygiene policy was launched in 2017, but it is not yet considered a public health priority by government ministries.

ACCESS/ PURCHASE

AGYW want higher quality MHM products. Urban girls have stronger preference for commercial disposable sanitary pads; rural AGYW have a stated preference for reusable pads.

Girls in urban and peri-urban areas, who have used disposable pads before have a strong preference for commercial disposable pads, citing convenience and reliability.

Currently there is low brand loyalty and girls desire greater quality and variety of product features, including absorbency, stickiness to underwear, bulk and combo packs (more than 10 pads per pack with different absorbency), durable wrapper to be used to dispose used products and wipes to clean themselves when there is lack of access to water. Most affordable products lack one or more of the attributes. No national quality standards exist yet for MHM products (currently in draft form) which leaves the market with low quality products.

SO WHY ARE GIRLS USING SANITARY PADS? WE ASKED THEM.



1. Fear of stains

2. Increased mobility

“

The use of “cloth at school [is] difficult because I [am] scared of leaks.”

“Cloth is comfortable but doesn’t stick. Pad sticks to panties and feels safe, no stains.

“...Use improvised product when I stay at home or out for short while. Otherwise if I go out always use pad to make myself free of any worry of staining and falling down.”

“School, dance class, church, use pad; only use cloth at home.”

“When I compare sanitary pads with cloth it’s incomparable. I continue using improvised products because I have no [other] option.”

“If we had enough money we would never buy the cloth. We have other priorities than this.”

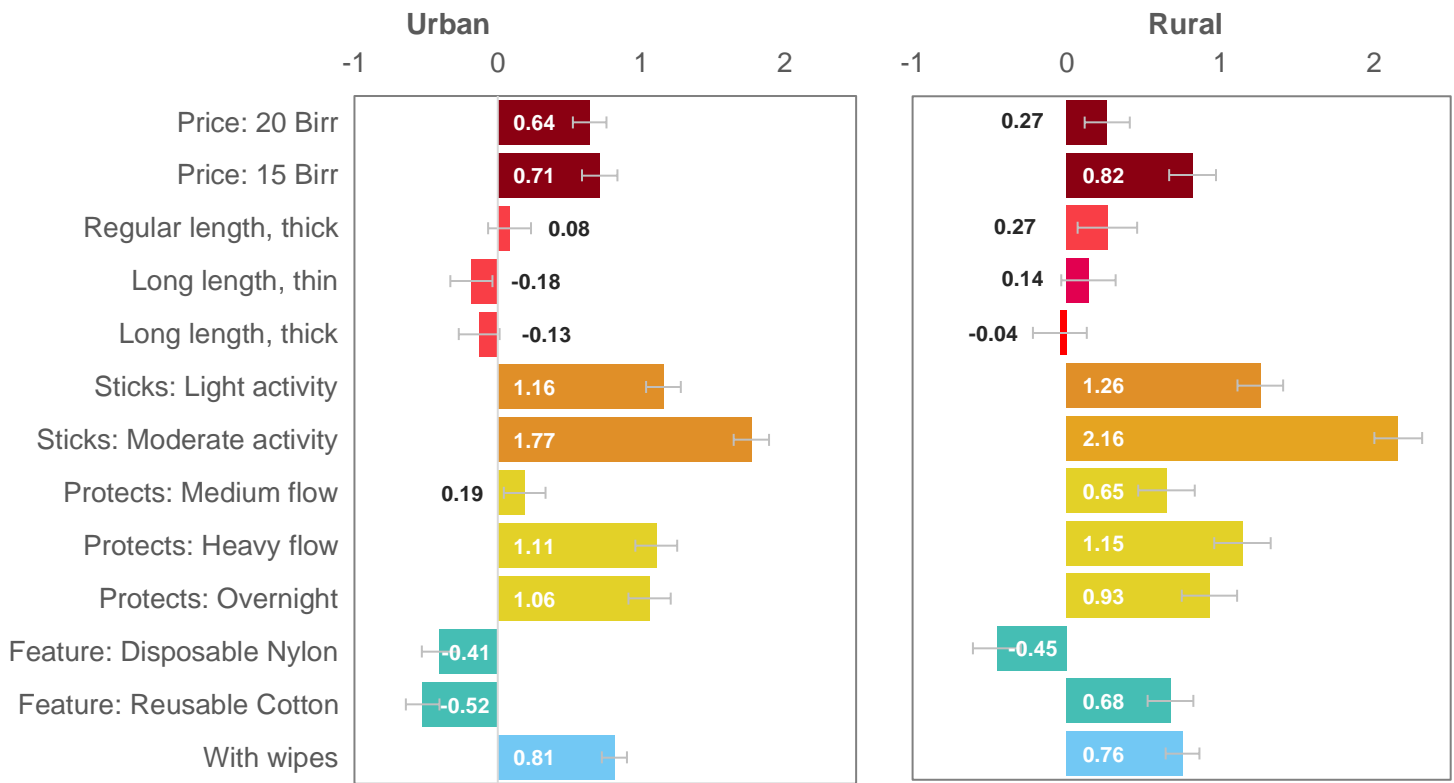
”

Most attribute levels tested were significantly associated with product choice (Annex 5). Strong preferences were seen for products that adhered well. Compared to products that only stayed in place while seated/not moving, AGYW had more 3.3 (95% CI: 3.0-3.6) times greater odds of selecting a product that stayed in place during light activity, and 6.8 (95% CI: 6.2-7.4) times greater odds of selecting a product that stayed in place during moderate/heavy activity, all other product features being equal. Factors such as a higher degree of leak protection (especially on the heaviest days or overnight) were also highly predictive of consumer preferences. Attribute levels, including product length and thickness, and product reusability, were not significantly associated with consumer preferences.

While most of the attribute levels tested were significant predictors of product preference, there were substantial differences in preferences between sub-groups. These differences were most striking when stratifying by urban vs. rural site (Figure 4). While AGYW in both sites still preferred less expensive products, those in rural areas seemed more price sensitive, with larger differences in preferences between a 15 or 20 Birr product, relative to one that cost 30 Birr per pack. AGYW also had stronger preferences for products that stayed in place during moderate/heavy activity (relative to those that stayed in place only while seated/not moving) than their counterparts in rural areas. Even more strikingly, while a reusable cotton product (relative to a disposable one) was not significantly associated with product choice in the primary analysis, stratification revealed a significant *negative* preference for

reusable products among AGYW in urban areas, and a significant *positive* preference for reusable products among those recruited from rural areas.

Fig. 4: Product Preferences among urban and rural AGYW on stratified conditional logistic regression



Average willingness to pay is higher than current market prices, but affordability is still a significant issue for some.

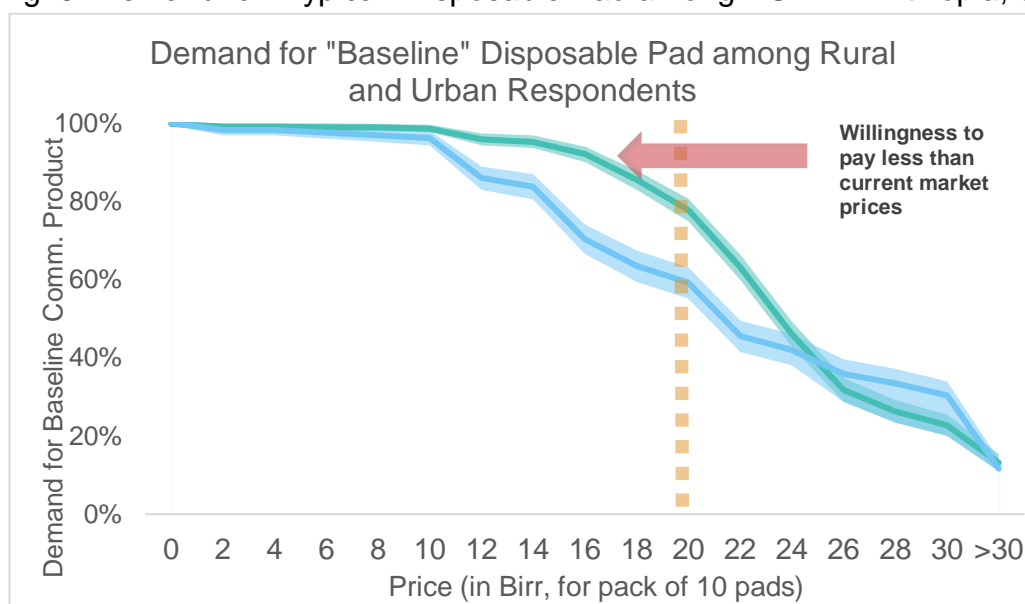
Before completing the DCE, AGYW were asked about their willingness to pay (WTP) for a “baseline” or “typical” disposable commercial pad, a de-branded example of which was shown to girls prior to assessing WTP. A pack of 10 “typical” pads cost approximately 20 Birr in the market. WTP was measured using a contingent valuation approach². Respondents were willing to pay an average of 25 Birr (95% CI: 24.2-25.7 Birr). WTP was significantly higher on average among young women compared

² In contingent valuation, participants are asked if they would pay a given amount for a product (typically the starting price is the expected average willingness to pay, or the market price for the product). Those who answer “yes” (e.g. would be willing to pay the starting price for the product) are then asked if they would be willing to pay the next higher price. This continues until the respondent answers “no” (e.g. is unwilling to pay the stated price), or a maximum tested value is reached, whichever comes first. Those who answer “no” to the starting price are asked the next lower price until they say yes (e.g. are willing to pay the stated price), or the lowest tested value is reached, whichever comes first. For our study, respondents were asked if they would be willing to pay 20 Birr for a pack of 10 “baseline” pads. Tested prices ranged from 0-30 Birr, with those willing to pay >30 Birr asked their maximum WTP.

to adolescents (26 vs. 24 Birr, $p=0.0448$), among urban vs. rural AGYW (26 vs. 23 Birr, $p<0.001$) (Figure 5), and among those who reported using a product similar to the “typical” commercial pad (26 vs. 23 Birr, $p=0.002$).

However, the focus on average prices obscures a substantial gap between current market prices and willingness to pay. Despite an average WTP greater than the current market price of the “typical” product, nearly 30% of respondents were not willing to pay 20 Birr (the average market price) for a pack of “typical” pads. The proportion of those for whom affordability was a problem was even higher for rural AGYW (41%)—especially those from Yetnora (49%)—those who had not used a product similar to the “typical” pad (36%), and those in the lower wealth quintiles (Quintile 1: 60%, Quintile 2: 41%, Quintile 3: 38%).

Fig. 5: Demand for “Typical” Disposable Pad among AGYW in Ethiopia, Stratified by Site



Pad access is limited by inconsistent supply and social barriers to purchase products

The MHM market has been growing in the past years but access is limited because of low distribution to rural areas and frequent stock-outs due to severe shortages of foreign currency needed to import products and raw materials for disposable pads.

There is limited and inconsistent distribution of free disposable and locally made reusable pads in schools. Retail sale of reusable pads is extremely limited, and non-existent in most locations. Some girls trade or sell free disposable pads for commercial pads to access a product they prefer.

“Reusable pad [from NGO] brought by mother only once- the NGO never came back.” 3/.u”

“There was help from school or other company last year but it lasted only two months and nothing.” 5/.female teacher

“Most shops are run by males so will be afraid to ask for pad from male shop keepers.”1/.?FG

“Aunt complains when I ask her to buy pads for me: ‘Why can’t you use pieces of cloth?’ There are a lot of clothes here... why do you want to spend money on an irrelevant item?”1/.FG

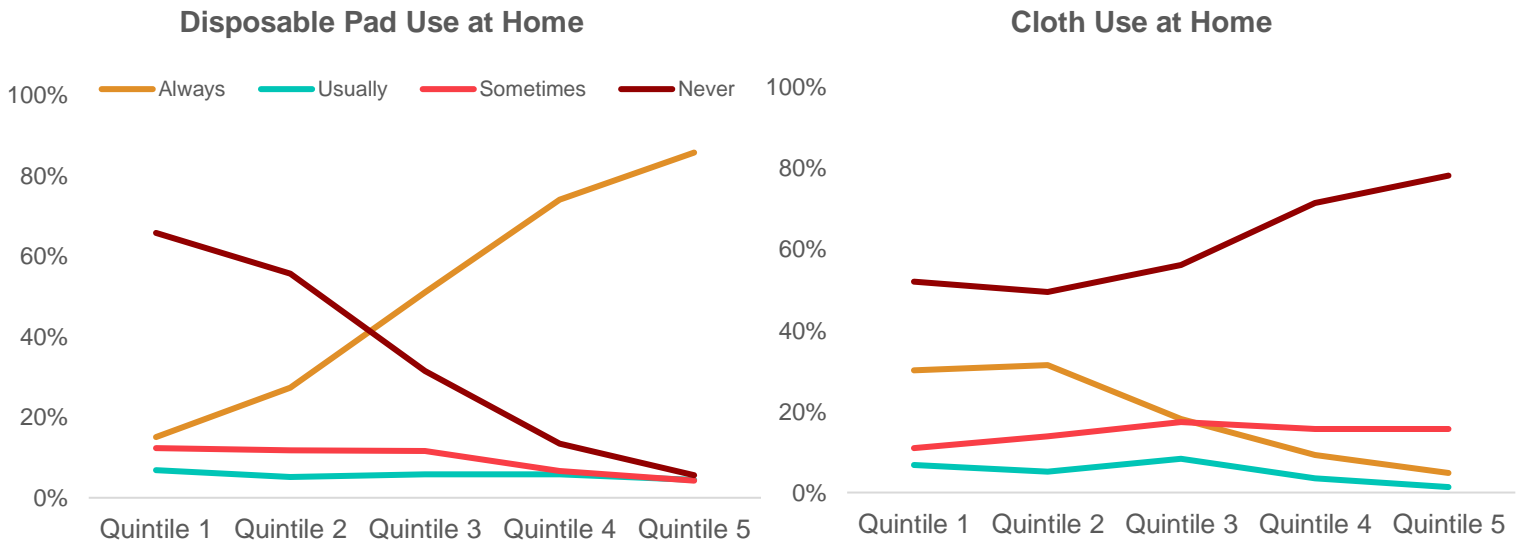
Even when commercial sanitary pads are available, additional social pressures limit access. Girls noted that some older family members don’t value sanitary pads as basic necessities and limit household funds allocated to purchase MHM products. Men and boys are ignorant of MHM, associate it with sexual activity and frequently harass AG/YW when they are buying MHM products in market areas. Because of this, girls are uncomfortable purchasing products from or around men and in crowded areas. AG/YW prefer to obtain pads from female shopkeepers and sometimes girls go the extra mile to find female shopkeepers. Pharmacies and supermarkets are more trusted outlets in urban areas while most girls and young women purchase their products from kiosks and shops.

USE

The majority of AGYW use commercial pads. Mixed use is common: more relabel pads are saved for use outside the home, and exclusive pad use increases with wealth.

Use of commercial products was high in our sample—about 76% overall—though use was significantly lower in rural areas compared to urban ones (91% vs. 55%). While the majority of respondents reported ever using commercial MHM products, exclusive use of disposable pads was lower (home use: 63% overall, urban: 81%, rural: 38%, $p < 0.001$), and was more commonly reported outside of the home than inside (outside of home use: 69% overall, urban: 88%, rural: 41%, $p < 0.001$). Mixed use strategy is common, with AG/YW using homemade cloth solutions at home, including improvised products like scraps of cloth or local cotton-type materials like Netela and Abujedi, and saving commercial pads for use at school or work. This likely reflects a prioritization of more costly commercial products during periods where greater freedom of movement and protection against leaks is most important (e.g. outside of the home). Exclusive pad use was strongly correlated with wealth quintile; those in the highest wealth quintile had 31 (95% CI: 17.2-55.8) times the odds of reporting exclusive pad use in the home than those in the lowest wealth quintile (Figure 6).

Fig. 6: Cloth and Disposable Pad Use by Urban Wealth Quintile



Low access to clean water and private spaces to wash and change pads is a deterrent to use and restricts mobility outside the home.

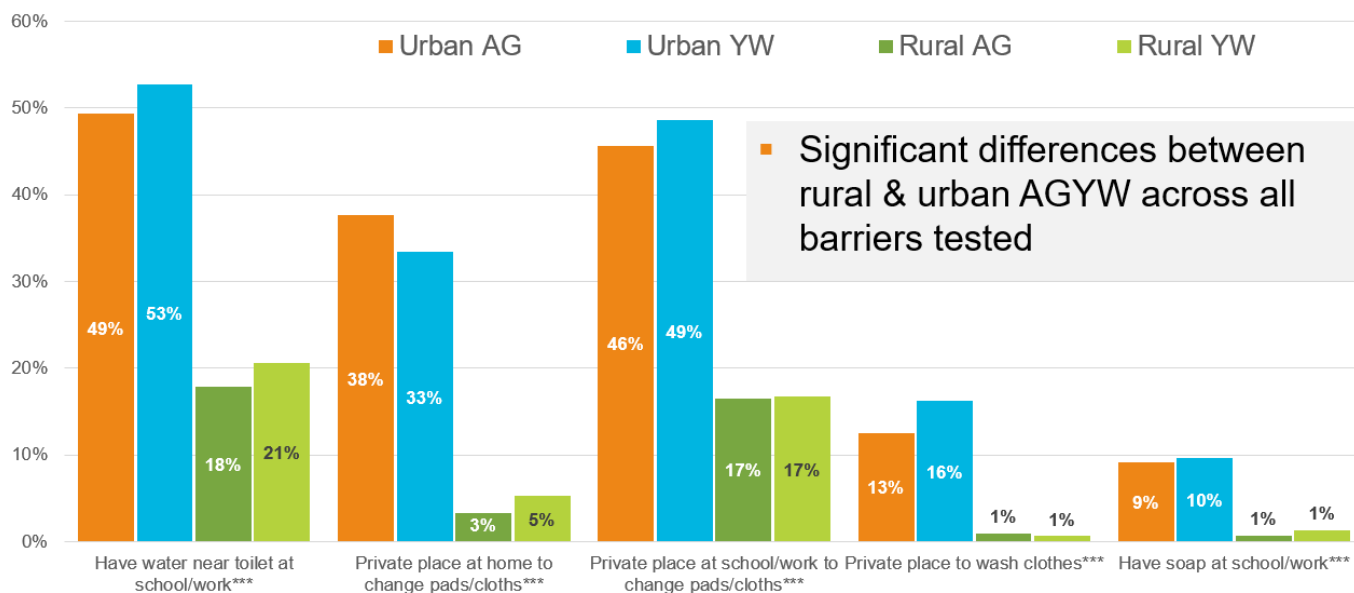
Structural barriers to hygienic MHM include a lack of access to water, private spaces to change, and soap. Most girls have no privacy to wash and dry reusable (washable) products and underwear at home. AGYW in Sendafa were much more likely than those in Addis to report these barriers, especially for venues outside of the home like school or work. Access to water at school/work for AG in Sendafa was only 35%, compared to 91% among AG in Addis ($p < 0.001$). Only 27% of AG and YW in Sendafa have a private place to change pads/cloths at work/school, compared to 47% of AG and 39% of YW in Addis ($p < 0.001$). Access to soap was limited for all participants, as low as 6% among AG in Sendafa, compared to 18% for AG in Addis ($p < 0.01$)

Most schools lack appropriate facilities (water and private toilets with lockable doors) to change sanitary pads and the school-break schedules are not responsive to girls’ menstrual management needs as teachers often deny or delay permission to change pads.

Approximately one-third of YW in both Addis and Sendafa report missing at least 1 day of work/school a month because of pain during their period. 22% of YW and 16% of AG in Sendafa say that access to pain medications is very difficult or impossible, compared to 5% of YW and 3% of AG in Addis ($p < 0.05$). In rural areas, access to pain medication is low.

Fig. 6: Reported access to WASH facilities by age, urban and rural

Structural barriers to MHM were common in our sample



“When I don’t have pad I don’t feel like going to school.” 2/:FG

“Pads better at keeping period secret because cloth may leak and stain dress...” 2/:FG

“[[Toilet] not comfortable to wash or change clothes- so I change new sanitary pad without washing my body.” diary/.

“... I didn’t dry [cloth] in sun so dry in house. That was hard – but now I always use Comfort [a sanitary pad].” 1/:FG

DISPOSAL

There are currently few waste facilities that support appropriate disposal and processing of MHM waste.

Toilets, rivers, fields and trash cans are common disposal places. Most AGYW in Addis (84%) report disposing of MHM products in garbage cans, versus 65% in Sendafa. AGYW in Sendafa are more likely to report disposing of products in a latrine or toilet than their counterparts in Addis (29% vs. 12%). Most schools lack appropriate facilities for disposal. There are few waste management systems, when they are present at all, that are able to process used MHM products.

Wrappers of pads are often used to dispose of used pads, but they are often transparent and thin which makes discrete disposal difficult. The lack of biodegradable product options leads to concerns around environmental effects as disposable product use increases.

Rural vs. Urban AGYW – Key Differences in journey and preferences

- 1) AGYW in our rural sites are **discussing menstruation at much lower rates** than their urban counterparts (~55% vs. ~68%).
- 2) Rural AGYW were also much more likely to list a **friend as their most trusted source of MHM information** than urban AGYW (56% vs. 18%).
 - a. Only 13% of rural AGYW listed their mothers as their most trusted source of MHM information, compared to 45% of urban AGYW.
- 3) Rural AGYW were also much more likely to say they **wanted additional information** on topics ranging from proper use and disposal of MHM products to pregnancy and STI prevention (between 80-90% of all rural AGYW wanted information across each of the 5 topics we asked about).
- 4) **Restrictions during periods** were ubiquitous in rural areas, where 97% of AGYW reported them.
- 5) Structural barriers including a **lack of private spaces, toilet facilities, water, and soap** were also extremely common in rural areas (and much more frequent than what we saw in our urban sites across all indicators).
- 6) **Awareness of commercial, disposable pads was lower** in rural areas than in urban ones, but still pretty high (78-84% in rural sites, compared to 97-99% in urban sites).
- 7) We still saw a **strong relationship between wealth quintile and reliance on commercial products**, though commercial product use was lower overall among rural AGYW (88% of urban AGYW always used commercial pads away from home, compared to 41% of rural AGYW).
- 8) **Mixed use of products** was more common in rural areas than urban areas (17% vs. 10%, $p < 0.001$).
- 9) **Disposal in rural areas is primarily in toilets/latrines**, compared to garbage cans in urban areas.
- 10) There is a significant negative preference against reusable products in urban areas, but a strong **preference for reusables** in rural areas (urban AGYW were twice as likely to choose a cotton disposable product compared to a reusable, controlling for other product features, whereas rural AGYW were twice as likely to choose the reusable product).

Recommendations

1. Include menstrual health within adolescent, sexual and reproductive health, and gender equity programs.

Menstruation is a critical milestone in the reproductive life cycle of an adolescent girl and can function as a key gateway to discuss about her body and sexual and reproductive health. When working on sexuality education with adolescents, talking about family planning can be challenging and might feel distant to those girls who don't see themselves as 'sexually active'. Using MHM and puberty as an entry point can help girls and boys familiarize with fertility and the reproductive system through age-appropriate language and concepts. For girls to seek out family planning methods in their sexually active years, it is essential that, as early as the time of menarche, they experience an enabling environment that does not stigmatize menstruation but recognizes it as a sign of good health.

Considering this, we recommend that sexual and reproductive health programs take ownership of driving the menstrual health agenda and incorporate it as a key element in its strategy and programming. Moreover, we recommend that donors invest in research to identify and optimize the linkages between menstrual health and funded development priorities such as family planning. Investing in understanding the linkages between MHM, sexual and reproductive health, and adolescent health programs could be key to unlocking potential for programming synergies, improved education for girls, and increased financing.

While this report focuses on adolescent girls and young women, it is important that the community of practice incorporates a life-cycle bleeding approach^{xii}, addressing the needs of girls from their pre-menarche, to post-partum bleeding and all the episodes in between. Both academic^{xiii} and practitioners^{xiv} research has showed how relevant changes in menstrual cycle patterns are for uptake and continued use of contraception, an insight that can help strengthen the effectiveness of family planning interventions.

Raising the profile of the menstrual hygiene agenda: an ongoing conversation

In the July 2018, the Gutmacher–Lancet Commission on sexual and reproductive health and rights offered a new, comprehensive definition of sexual and reproductive rights^{xv} that, the Commission argued, was necessary because “policy-makers have long approached sexual and reproductive health and rights as narrow sets of isolated health issues”.^{xvi} This definition included the ability to “receive accurate information about the reproductive system and the services needed to maintain reproductive health” and to “manage menstruation in a hygienic way, in privacy, and with dignity.”^{xvii} . As pointed out in Phillips-Howard and colleagues' Correspondence, the definition neglected consideration of menstruation on sexual and reproductive health, psychosocial stress, education and employment.^{xviii} The authors also argued that the Gutmacher–Lancet Commission's definition failed to address the enabling social and physical environment which are necessary to address menstruation related needs.^{xix}

2. Tip the calculus for rural markets.

Despite evidence indicating latent demand, reliable access to quality MHM products in rural areas is limited and faces significant challenges to development. The market for menstrual hygiene products in rural areas is broken. The cost of developing and supplying these markets is higher than the consumer willingness to pay. Manufacturers face additional costs in supplying rural markets including increased transportation and marketing costs, which are higher because more AGYW need to be converted from never users to mixed users, AGYW have less access to mass media and school-based programs promotional activities have a lower return on investment. The low price consumers are willing to pay for MHM products in rural area derives from a lack of household prioritization, limited disposable income and a lack of awareness of the benefits of the product which is often only obtained after first use of the product.

Additionally, without significant improvement in the macroeconomic conditions that restrict access to foreign currency, developing a sustainable commercial market will be highly unlikely.


Pilot ways to tip the market in rural areas

In this environment of difficult macro-econ conditions, dispersed commercial supply, and likely latent demand, we recommend localized interventions are piloted that could tip the calculus of supplying quality MHM products in certain underserved rural environments. Pilot opportunities could include:

Incentivize the use of locally sourced absorbents. Many of the raw materials used in producing sanitary pads, including the pulp board used as the absorbent core and adhesives, are imported from countries with high labor cost (e.g., US and Scandinavia). As a result, manufacturers have limited ability to reduce dependence on imported materials and reduce the cost of product inputs. Manufacturers from the Indian market estimated that if local products could be used for absorbents, one could cut costs by approximately 20%^{xx}. Moreover, the use of locally sourced absorbents could create benefits for local farmers and small enterprises.

Using locally sourced materials, such as banana fibers, is technically challenging and will require significant investments from manufacturers. Locally sourced products often contain a higher amount of water than wood pulp leading to lower yields and challenges achieving high throughput. Donors should consider grants or other investments to reduce the risk associated with investigating and operationalizing the use of locally sourced products. National and/or state governments could incentivize locally sourced products by either requiring this within public sector tenders or by mandating it within national product standards.

“We’re working very hard to turn the banana fibers into something useful. And would I say that the quality that we’re producing right now with the banana fibers is equal to, let’s say, an imported product? Probably not. No. I mean because the processing of the fibers into an absorbent fluff, that’s an art form. I mean that’s not easy...I wouldn’t say that we have this nailed.”
-Manufacturer



Pilot catalytic demand generation events with coordinated retail supply. Many retailers don't stock because there is no demand for product, and there is no demand for product because there is no supply. Consumers, wholesalers, and and retailers have been responsive to the few product marketing campaigns targeting consumers, but no actor has been willing to invest in significant promotion in rural areas.

Pilots attempting to catalyze a change in the equilibrium of supply and demand in targeted rural markets could be tested. Could we transform small areas that are highly reliant on homemade products? Will one-time demand generation activities incentivize suppliers and distributors to build out the markets? Can these promotion campaigns be done for a category of products or in public private partnerships with local brands? Will entrepreneurs engage? What will it cost to 'tip the market'? This promotion could potentially be integrated with other efforts- including school based education on adolescent health, cross-messaging with current SRH campaigns, leveraging supply channels of other products.

Target investments towards programs with a clear and sustainable business model. Reusable products are often the target of donor investment and strategy, often as a form of economic empowerment for smallscale womens groups. In Ethiopia, most reusable pad ventures are +90% dependent on donor subsidy to purchase the products for free distribution to girls and refugees. While these programs are filling a specific need and gap in the market, they are unlikely to lead to scale and sustainability unless they are profitable.

This removes any incentive to invest in the quality via consumer preferences or the cost-efficiency of the production. Our research indicates that rural women and current cloth users stated a strong preference for reusable pads, although their preference is also highly price sensitive. Although it may be unlikely that this model can generate a return on investment in a sustained way, both the quality of the products and the efficient use of subsidy could be improved for this channel of rural supply.

We recommend research into the actual product lifespan and true cost of ownership of reusable pads, including the costs of proper washing and drying for safe use; modeling the cost of inputs, processing, distribution, and marketing pads outside of free NGO channels; and support for the introduction of consumer feedback from the intended target consumer segments into the design process of the product.

3. Give AGYW the products they want, from where they they want to get it.

The choice of sanitary protection is a personal decision based on cultural acceptability and user preferences^{xxi}. Evidence from Ethiopia indicates that AGYW have strong preferences around stickiness, length of the pad, wipes, absorbency, and price. They especially value products that will remain sticky with moderate activity and will protect them from leaks. Additionally, interviews and qualitative surveys indicatd that AGYW prefer to purchase products from women and in environments such as beauty parlors. We recommend that preferences of AGYW should form the basis of



programming and procurement decisions and AGYW should be involved in the planning discussions and decisions about the materials and/or products to be supported^{xxii}.

The majority of the current commercial MHM products in the Ethiopia market are of relatively low quality and have little differentiation in attributes AGYW value, despite significant consumer willingness to pay for them. No segment of AGYW consumers cited any brand loyalty, seeing the low quality products as interchangeable based largely on availability. At the time of the completion of this research, the Ethiopian Standards Agency was in the process of drafting minimum quality standards to ensure the products on the market are safe for consumers and meet a minimum level of effectiveness.

However, for commercial products to go beyond minimum standards and meet consumer preferences and build brand loyalty, higher quality products or raw materials would need to be imported from multinational corporations (MNC) or significant investments made in local manufacturing production and consumer feedback mechanisms. Various MNCs have not entered the market or limited their entry and investment due to high barriers: tariffs on importation, unstable macro-environment, and limited perceived demand preventing investment in manufacturing facilities. A few local manufacturers have recently invested in new, high end production equipment and training but have not yet introduced a product that is greatly differentiated from current products on the market.

Advocacy should encourage local importers and manufacturers to offer differentiated, higher quality products aligned with the preferences of AGYW. This advocacy could be rooted in sharing our detailed consumer research on willingness to pay for preferred attributes and support to estimate market size for higher quality products. **For local manufacturers, additional research and support may be needed to understand what capitol investments in production or inputs may be needed to achieve the desired attributes.**

4. Access is not enough. Support AGYW through their entire MHM Journey.

As has been noted by others^{xxiii}, it is important to acknowledge that access to MHM products alone is not enough to ensure AGYW are able to navigate their monthly MHM journey. Programming must also prioritize shaping systems to provide necessary information, empowering influencers and social norms, and sanitation considerations. We recommend that **MHM considerations be integrated into existing SRH, gender, adolescent health programing tied to shaping education and social norm systems.**

It is important to note that ***all WASH programming should also plan for the likely increase in MHM waste that will occur as the economy and MHM market develop.*** If use of disposable sanitary products continues as the economy improves in line with trends in India, USA, and China, MHM waste could increase 30 fold. Although this waste will represent a small portion of waste per capita per year, programming should consider how to ensure WASH facilities can support private use and appropriate disposal of MHM products.


5. Facilitate coordination between advocates, private manufacturers/importers and public ministries.

Until very recently, MHM was a low priority for the Ethiopian Ministry of Health. With support from UNICEF in 2017, the MOH has developed guidelines and is exploring how to support MHM through free, subsidized School Health Programs. Additionally, the Ethiopian Standards Agency is in the process of drafting minimum standards for MHM products. However, the primary focus has been on public and nonprofit actors, and there has been little to no coordination with the commercial actors who remain the primary suppliers of MHM products.

To meet the MHM needs of Ethiopian AG/YW (and all women of reproductive age) sustainably at scale, a commercial supply of MHM products is required. Greater coordination should be facilitated between the commercial actors and active public technical working group on MHM.

Coordination between these groups of actors could have three objectives. **First, School Health Programs could be expanded and leveraged to make an aggregated pool for private actors to market their disposable and reusable products.** Findings show that adolescent girls desire more information on MHM, including biology, product options, and pain management, that should be incorporated in school program curriculums. An expansion of such a program would also allow for an aggregation of the MHM products needed across many schools into volumes that would be attractive to private actors. Aggregating the school product volumes would lower the variable cost of promotion for importers and local manufacturers, and begin to build demand in selected areas where supply could be directed. To avoid favouring a single actor, multiple disposable and reusable products should be demonstrated and offered to girls. In addition to helping the market develop for selected areas, this would greatly improve the knowledge of adolescent girls, help them make informed decisions along their MHM journey, and address Ethiopian government agenda of promoting development amongst adolescents. To implement this intervention, a facilitator would need to support curriculum development, bridge the gap between the private and public actors, and advocate with the government.

Second, in absence of an industry association, a third party coordinator could facilitate input and advocacy from private sector MHM product importers and manufacturers to government ministries and relevant technical working groups. This could immediately be helpful to facilitate private sector input on the MHM product standards and regulation in development, and potentially in tax policy development and on inclusion of MHM in broader public agendas. The Ethiopian Ministry of Industry is currently considering further tax and regulatory incentives to encourage domestic production with greater local sourcing and regional exportation, input to help with the currency situation. MHM manufactures could be linked with this government scheme to consider the economic feasibility of these strategies. Additionally, the East African Legislative Assembly (EALA, 2013) urges partner states to waive taxes on sanitary pads and make pads and pain killers available to schoolgirls. A few other countries have removed taxes on MHM products: a facilitator could help coordinate advocacy with the GOE to reduce or remove the current luxury tax imposed on sanitary pads.



Current national MHM policies focus mostly on schools and WASH, while broader MHM inclusion in relevant fields such as adolescent, sexual and reproductive health as well as work and labour policies is very limited. UNICEF is taking steps to advocate with the MOH to work with other government ministries to expand MHM guidelines. Facilitators should advocate for the consideration of private actors as partners in these efforts, whose interests should be understood and incorporated where appropriate. This may include representation on technical working groups and facilitation of public private partnerships.

Thirdly, investments in the capacity of the technical working group to analyze and distribute the PMA2020 data sets would greatly strengthen national strategies and provide valuable information to to manufacturers and other total market stakeholders.

Annex

Annex 1 – Commercial Market product breadth



Pantyliners

Eve – GPY Sanitary

Hibis – Han Tide Biomedical

Glory Girl - OUIOUI



Sanitary Pads

Eve – GPY Sanitary

Flexy & Honey – HNM Plc

Bella & Monalisa – Markos Plc

Anna

Lotex– Lilac

Comfort – S&Y

Always – P&G

Hibis – Han Tide Biomedical

Glory Girl - OUIOUI

Rozi – Zet Kimya Ltd.

Molped – Sukru Ozcan

Diana – Paksel Kimya Sanayi

Sara – Gelan

Mariam Seba

Be Girl

(unbranded) – NGO

Maryod



Tampons

Glory Girl - OUIOUI

Breadth of brands

Locally Manufactured Disposable

Imported Disposable

Locally Manufactured Reusable

Annex 2 – List of Stakeholder Organizations Interviewed*

Interviewed, filled questionnaires, and/or participated in the external workshop

Government

- MOH – Ministry of Health
- EFMHACA - The Ethiopian Food, Medicines and Health care administration and Control Authority (
- ESA – Ethiopian Standards Agency
- MOI – Ministry of Industry
- MOI Institute - Food, Beverage and Pharmaceutical Industry Development Institute

NGO / UN

- UNICEF
- SNV
- PLAN

Manufacturers

- GPY Sanitary Products Manufacturing - Manufacturer of EVE
- HNM PLC - Manufacturer of Flexi and Honey
- Lilac - Manufacturer of Lotex
- Meriam Seba (Regional manufacturer of reusable pads who is supported by UNICEF)
- Amstel - Manufacturer of Maryod

Importers

- Wabel - Importer of Comfort
- MZWIT - Importer of HIBIS
- P&G – Owner of Always

Wholesalers and Retailers

- Merkato wholesalers – 8 wholesalers
- Retailers – 40 – 50 Retailers / Shops in Addis Ababa, Bishoftu, Adama, Arba minch and Shire

Annex 3: Discrete Choice Experiment & Household Survey

We recruited 1,499 AGYW from two urban sites (Addis Ababa [n=496] and Sendafa [n=394]) and two rural sites (Yetnora [n=305] and Goha-Tsihon [n=304]) from November 22 – December 2, 2017 and May 1-May 12, 2018. AGYW who consented to join the study responded to a short survey about their MHM product knowledge and use, and completed a discrete choice experiment (DCE). The DCE included 8 “choice tasks” in which respondents were asked to select their preferred option from a pair of products which differed according to 6 pre-defined product features. We tested 6 product attributes with 2-4 levels each (**Annex 5**). These attributes and levels were chosen based on the results of our formative qualitative research, a review of the literature, and input from MHM experts.

Product features included price per pack of ten pads (15, 20, or 30 Birr), pad shape (regular length and thin, regular length and thick, long length and thin, or long length and thick), protection from leaks (6 hours of leak protection on the lightest, medium, heaviest flow days, or overnight protection), how well it stays in place (if seated/not moving, during light activity, or during moderate/heavy activity), pad texture and features (disposable with a soft cotton feel, disposable with a rough nylon feel, or reusable/cleanable with a soft cotton feel), and wipes (with or without wipes).

About Discrete Choice Experiments:

We assessed AGYW’s preferences and willingness to pay for MHM products using a discrete choice experiment (DCE). DCE’s are a type of stated preference method in which respondents are presented with a series of product sets, usually containing two (or more) products that vary according to the levels (or values) of a pre-defined set of product attributes. Attributes might include features such as price, size, color, etc. Respondents are asked to select their preferred option out of each product set. The results of a DCE allow researchers to estimate consumer preferences for product attributes, and (if price is included as an attribute) to estimate the amount a consumer would be willing to pay for a product feature he/she desires, relative to a product without that feature (e.g. consumers would be willing to pay an additional \$0.10 for each additional hour of sanitary pad leak protection). Because a DCE is a type of stated (rather than revealed) preference study, researchers are able to test preferences for hypothetical or novel services/products, as well as features or combinations of features, that are not yet available in the market.

Participants in the study averaged 18.0 (interquartile range [IQR]: 16-20) years of age. The majority (64%) were currently in school. This proportion of AGYW in school was slightly higher in Addis Ababa (68%) than the other three sites (61-62%). Respondents from Addis were also significantly more likely to have completed matriculation or higher (14% vs. 2-5%, $p<0.001$). Respondents recruited from the urban sites came from wealthier households on average than those recruited from rural sites (average urban wealth quintile: 4.4 vs. 2.6, $p<0.001$), and were more likely to report having money that they alone can choose how to spend (26% vs. 10%, $p<0.001$). Urban respondents also reported higher monthly amounts of self-controlled money (1,147 vs. 754 Birr, $p=0.006$). Most respondents (76%) reported having ever used a product like a pad, tampon, or sanitary napkin that they had to buy (or someone had to buy for them), though use was higher in Addis (93%) and Sendafa (89%) than in Yetnora (44%) or Goha-Tsihon (66%, $p<0.001$).

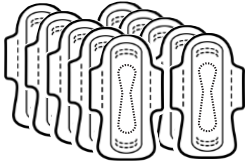
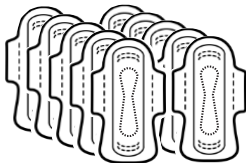
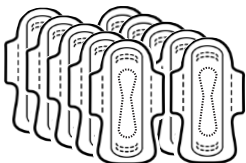
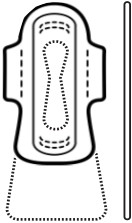
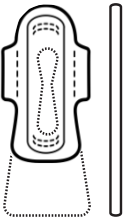
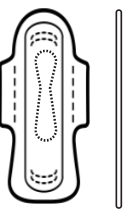
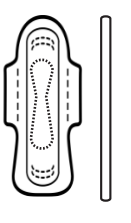









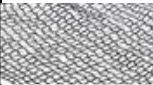



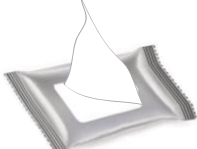

Annex 4: Demographic Characteristics of AGYW Recruited for the DCE from Rural and Urban Ethiopia

Variable	Total (N=1,499) N (%)	Urban/Peri-Urban Sites (N=890) N (%)		Rural Sites (N=609) N (%)	
		Addis Ababa (N=496)	Sendafa (N=394)	Yetnora (N=305)	Goha-Tsihon (N=304)
Age (Mean, SD)	18.0 (3.0)	18.1 (3.2)	17.8 (2.9)	18.0 (2.7)	18.2 (2.8)
Currently in School	959 (64.0)	337 (67.9)	246 (62.4)	190 (62.3)	186 (61.2)
Education Completed					
Primary or less	176 (11.7)	36 (7.3)	51 (12.9)	44 (14.4)	44 (14.5)
Some middle school	586 (39.1)	157 (31.7)	161 (40.9)	147 (48.2)	121 (39.8)
Some high school	638 (42.6)	234 (47.2)	162 (41.1)	108 (35.4)	134 (44.1)
Matriculation or above	100 (6.7)	69 (13.9)	20 (5.1)	6 (2.0)	5 (1.6)
Urban Wealth Quintile (Mean, SD)*	3.7 (1.3)	4.7 (0.6)	4.1 (1.0)	2.4 (0.9)	2.9 (1.1)
Married	199 (13.3)	30 (6.1)	39 (9.9)	59 (19.3)	71 (23.4)
Age at First Period (Mean, SD)	14.1 (1.4)	13.7 (1.4)	13.9 (1.3)	14.8 (1.4)	14.4 (1.1)
Has Own Money that She Alone Decides how to Spend	294 (19.7)	145 (29.5)	89 (22.7)	27 (8.9)	33 (10.9)
Monthly amount of own money, in Birr (Mean, SD)	1,067 (1,256)	1,370 (1,463)	784 (982)	730 (716)	774 (956)
Ever Used a Commercial MHM Product	1,145 (76.4)	463 (93.4)	349 (88.6)	133 (43.6)	200 (65.8)

- * Urban wealth quintile selected to facilitate comparability across study sites

Annex 5: Product Attributes and Levels Tested during the Discrete Choice Experiments

Attribute	Level 1	Level 2	Level 3	Level 4
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Price (Per pack of 10)	15 Birr 	20 Birr 	30 Birr 	
Pad shape	 Regular length, thin pad	 Regular length, thick pad	 Long length, thin pad	 Long length, thick pad
Protection from leaks	Provides 6 hours of leak protection on lightest days 	Provides 6 hours of leak protection on medium flow days 	Provides 6 hours of protection on highest flow days 	 Provides protection overnight
How well it stays in place	 Stays in place if seated/not moving	 Stays in place during light activity (walking)	 Stays in place during moderate-heavy activity (dancing/running)	
Pad features & texture	  Disposable, with soft, cotton feel	  Disposable, with rough, nylon feel	Reusable, cleanable with soft, cotton feel  	
Wipes	Pad sold with wipes 	 Pad sold without wipes		

Attribute	Level	Odds Ratio (OR)	95% CI
Price	30 Birr	REF	REF


	20 Birr	1.70	(1.57 – 1.85)
	15 Birr	2.09	(1.91 – 2.27)
Shape	Regular Length, Thin	REF	REF
	Regular Length: Thick	1.10	(0.99 – 1.22)
	Long Length, Thin	0.90	(0.82 – 1.00)
	Long Length, Thick	0.86	(0.78 – 0.95)
Ability to Stay in Place	While Seated/Not Moving	REF	REF
	During Light Activity	3.31	(3.04 – 3.60)
	During Moderate/Heavy Activity	6.77	(6.21 – 7.38)
Leak Protection	6 Hrs. of Protection on the Lightest Days	REF	REF
	6 Hrs. of Protection on Medium Flow Days	1.41	(1.27 – 1.56)
	6 Hrs. of Protection on Heaviest Flow Days	3.01	(2.72 – 3.33)
	Protection Overnight	2.84	(2.56 – 3.14)
Features	Disposable with Soft, Cotton Feel	REF	REF
	Disposable with Rough, Nylon Feel	0.67	(0.61 – 0.73)
	Reusable with Soft, Cotton Feel	0.96	(0.89 – 1.04)
Wipes	Does Not Come with Wipes	REF	REF
	Comes with Wipes	2.06	(1.94 – 2.19)

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