

Menstrual Hygiene among Low-Resource Women in St. Louis: A Needs Assessment

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EXECUTIVE SUMMARY

Menstruation is a normal biological process experienced by millions of women around the world on a monthly basis. While menstrual hygiene has been receiving increasing attention as a public health and human rights issue globally, in the U.S. the focus has been on one of financial and policy equity. Little information exists, however, on the menstrual hygiene needs of low-income women. Therefore, we conducted a needs assessment to gauge the menstrual hygiene needs of low-income women in the St. Louis area from both their perspective and the perspective of community organizations that serve them.

We collected data via three different methodologies. First, we surveyed 184 women through 10 participating community service organizations. Next, we conducted focus group discussions with a total of 17 women at three of the community service organizations. Finally, we distributed a survey for community service organizations to complete electronically.

Of the women we surveyed, nearly two-thirds (64%) needed menstrual hygiene products at some point over the past 12 months but did not have money to purchase them. For over one-fifth of women (21%), this happened on a monthly basis. Importantly, 46% of women struggled both to buy food and menstrual hygiene products during the past 12 months. Furthermore, there was no difference in menstrual hygiene needs by age – both women younger than 30 years old and those over 30 years experienced a lack of money to buy menstrual hygiene products as needed, as well as had a similar frequency of doing so.

Just over half of women prefer to use disposable pads while just under half prefer tampons. Women tend to be using the type of product that they prefer – 92% of those who prefer pads use them most frequently and 80% of those who prefer tampons use those most frequently. Many women often ‘make do’, however, with toilet paper, tissue, paper towels, or even their kids’ diapers. Beyond simply a lack of money to buy the menstrual hygiene products they need, the menstrual hygiene challenges that women described fell into three main categories: 1) heavy flow and the need for higher absorbency products, 2) transportation time and costs to get to stores that sell larger quantities at more affordable prices, and 3) broader issues of safety, security, and sanitation.

Most women in society can identify with having to ‘make do’ with toilet paper or tissue for a few hours when they are caught off guard by the start of their menstrual flow or run out of products. But, for the women who participated in this needs assessment, they are often forced to ‘make do’ all day, for their entire cycle, and often every month. This assessment has documented that low-income women in St. Louis do have significant unmet needs related to menstrual hygiene. It provides several key recommendations to address these needs, including developing a network to distribute menstrual hygiene products to community service organizations, creating a directory with information on where women can find resources for menstrual hygiene, providing additional education around menstrual hygiene, and advocating for more accessibility to menstrual hygiene for women through lower taxes on products, extended transfer time on public transit, and better access to safe bathrooms at all hours.

I. BACKGROUND

Menstruation is the normal biological process of shedding the endometrial lining of the uterus and is experienced by millions of women around the world on a monthly basis (Sebert Kuhlmann et al 2017). Adequate menstrual hygiene management involves access to clean sanitary materials that can be changed in privacy as often as necessary, access to soap and water for washing as necessary, and access to a place for the hygienic disposal of used sanitary materials (Sommer et al, 2013). Inadequate menstrual hygiene has been associated with infections (Sumpter & Torondel, 2013) as well as can negatively affect health-related quality of life (Sveinsdóttir, 2018). Furthermore, negative expectations around menstruation have been associated with higher rates of school absenteeism and missing activities among urban adolescents in the U.S. (Houston et al, 2006).

Over the past few years, menstrual hygiene has received increasing attention globally, especially in low-resource countries, as a public health and human rights issue (Sommer et al, 2012). Lack of access to clean water and sanitation often compounds poor menstrual hygiene management both for school girls (Sommer, 2010; Sommer & Sahin, 2013) and for refugees /displaced populations (Sommer, 2012). There is increasing evidence, however, that interventions specifically addressing menstrual hygiene do improve knowledge and awareness of menstrual hygiene along with outcomes such as school attendance (Sebert Kuhlmann et al, 2017).

Nationally, efforts to draw attention to the importance of menstrual hygiene have focused on menstrual hygiene as a financial and policy equity issue. Some states, such as Oregon and Delaware, have no sales tax at all, so menstrual hygiene products are never taxed. Two states, Maryland and Massachusetts, exempt menstrual hygiene products from sales tax under medical equipment exemptions (Comptroller of Maryland; Massachusetts Department of Revenue), while several other states, such as Pennsylvania, exempt menstrual hygiene products from sales tax in their own right. In August 2017, the Federal Bureau of Prisons announced a policy change to provide menstrual hygiene products free of cost, specifically tampons (super and regular), maxi pads with wings (super and regular), and underwear liners (regular) to female offenders (U.S. Department of Justice, 2017). While most state departments of correction provide female offenders with only a limited supply of poor quality pads, several states, including Maryland (General Assembly of Maryland), now provide female offenders with both tampons and pads of varying sizes free of cost.

In Missouri, the issue of menstrual hygiene has gained increasing attention. Representative Gina Mitten, D-Richmond Heights, introduced legislation during the past two sessions including HB 841 in 2017 that required the tax on feminine hygiene products to “...not exceed the tax levied for food” and HB2503 in 2018 proposing that both feminine hygiene products *and* diapers be taxed at the lower ‘food-tax’ rate (Missouri House of Representatives). Neither bill received a hearing in the Missouri legislature, however.

In the St. Louis metropolitan area, local sales taxes vary widely. The combined tax rate (state, county, and local) varies anywhere between 7.613% and 11.679% for general sales tax and 4.725% to 8.391% for food sales tax (Missouri Department of Revenue). The difference in the estimated tax of \$0.27 to \$0.30 per pack of menstrual hygiene pads (see Table 1) between the full sales tax rate and the lower food sales tax rate for both the lower and the higher tax areas can add up to approximately the cost of a 60-count pack of panty liners over the course of a year. This may not seem like much, but for someone who may be struggling to earn enough money for basic necessities an extra pack of liners every year would be tremendously helpful. Furthermore, this is a financial burden that only affects women.

Table 1. Estimated Sales Tax on a 36-Pack of Overnight Maxi Pads with Wings Costing \$9.27		
<i>St. Louis Metropolitan Area</i>	<i>Tax Rate</i>	<i>Tax Added per Pack</i>
- Full sales tax rate, lowest area	7.613%	\$0.71
Full sales tax rate, highest area	11.679%	\$1.08
- Food sales tax rate, lowest area	4.725%	\$0.44
Food sales tax rate, highest area	8.391%	\$0.78

While momentum has been growing on the policy and legislative side, to our knowledge, little has been done to document whether menstrual hygiene management is an issue for low-resource women either in St. Louis or even more broadly in the United States and, if so, to what extent and what particular issues they may face. Therefore, we conducted a needs assessment around menstrual hygiene management with low-resource women in the St. Louis area in order to document if, and to what extent, menstrual hygiene is an unmet need for these individuals.

II: Goals/Objectives

The overarching goal of this assessment was to gauge the menstrual hygiene needs of low-income women in the St. Louis area from both their perspective and the perspective of community organizations that serve them.

The specific objectives of the needs assessment were to:

1. Identify and document women's perceived needs and preferences around menstrual hygiene.
2. Understand the barriers that women face to menstrual hygiene and gather their suggestions to address the identified needs.
3. Assess the expressed needs of clients from the perspective of various community service organizations and document what community service organizations are currently doing around menstrual hygiene.

III: Strategy

For the assessment, data were collected via three methodologies in order to understand the menstrual hygiene needs of low-income women in the St. Louis area from multiple viewpoints. First, data were collected via interviewer-administered surveys with women receiving services at one of the participating community service organizations. Next, focus group discussions were held with women through three of the participating community service organizations. And finally, an electronic survey was distributed to community organizations to assess their view from an organizational standpoint of the need in St. Louis. The Institutional Review Board at Saint Louis University approved this study. All data were collected between July 2017 and March 2018. Table 2 provides a summary of the various data collection methodologies and their relationship to the needs assessment aims.

Table 2. Needs Assessment Data Collection Methodologies with Sample Size by Evaluation Aim

<i>Needs Assessment Aim</i>	<i>Methodology</i>	<i>Sample Size</i>
- Identify and document women’s perceived needs and preferences around menstrual hygiene	Interviewer-administered surveys	184
- Understand the barriers that women face to menstrual hygiene and gather their suggestions to address the identified needs	Focus group discussions	17
- Assess the expressed needs of clients from the perspective of various community service organizations and document what community service organizations are currently doing around menstrual hygiene	Electronic surveys	18

Interviewer-Administered Survey

We surveyed 184 women, age 18 years or older, who were receiving services from one of the ten participating community service organizations. Surveys were interviewer-administered (i.e., questions were read orally by the interviewer who then recorded the respondents’ answers) in a private room or space within the community service organization. The surveys asked about demographic characteristics including questions about food security, experiences with menstruation and menstrual hygiene, and product preferences. In addition, the survey included several open-ended questions asking about barriers and challenges to menstrual hygiene, how women cope, and their suggestions to address identified concerns. Women provided verbal informed consent prior to the start of the survey. Each survey lasted between 15-20 minutes. After completing the surveys, women were compensated with \$20 cash or store gift card (depending on the preference of the community service organization) for their time. The survey responses were entered into SPSS for analysis.

Focus Group Discussions

In three of the ten participating community service organizations, we conducted focus group discussions which allowed women to discuss their experiences, challenges and frustrations with menstrual hygiene as well as to talk about their suggestions for how to address these issues more in-depth. A total of 17 women participated in the three focus group discussions, ranging from three to nine women per focus group. As with the surveys, women provided verbal informed consent prior to the start of the focus group discussion and, upon completion, were given \$20 cash or store gift card as compensation for their

time. All women also agreed to audio recording for the focus group discussions, which lasted between 45-60 minutes each. The focus groups were conducted in a private room within the community service organization. The focus group discussions were led by a facilitator along with a note-taker who was also responsible for the audio recorder. Content analysis was used to analyze the transcripts from the focus group discussions.

Electronic Survey of Organizations

We created an electronic survey in Qualtrics to assess the perspective of community service organizations and document what, if anything, they are currently doing to service menstrual hygiene needs. The survey took 5-10 minutes to complete electronically. No participation incentive was provided for completion of the electronic survey. The survey was distributed through contacts at local organizations who were then asked to share with others who might be interested, including a few organizations who distributed the survey link to their partner organizations either through a list serve or by including it in their electronic newsletter. The electronic survey was opened a total of 72 times, but only 18 unique organizations completed it (a 25% completion rate). The completed Qualtrics data were downloaded into Excel for analysis.

IV. MAJOR FINDINGS

Survey - Background Characteristics

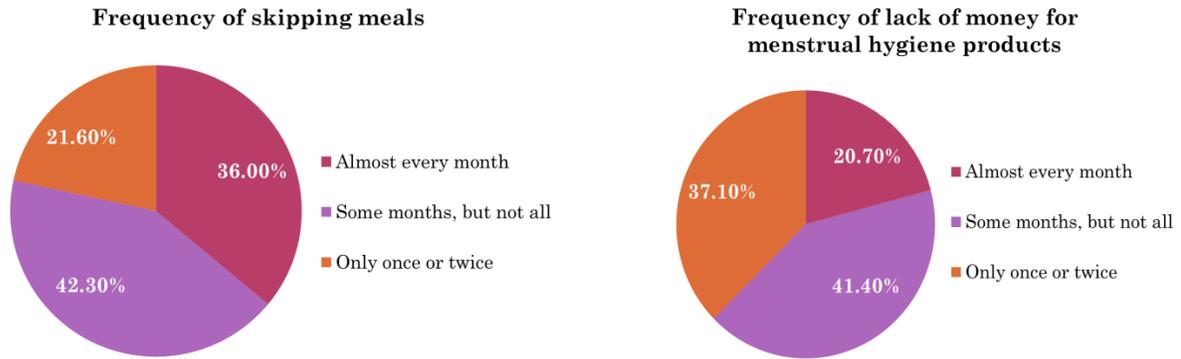
Of our sample of 184 women, 183 surveys were complete and were thus included in analysis. Women ranged in age from 18 to 69 years with a mean of 35.8 years (± 13.3). Women varied widely in their age at menarche (first menstruation), which is typical, ranging from 8 to 17 years with a mean of 12.5 years (± 1.7). Only about a quarter of the women had any post-secondary education or training; most (68%) had attended high school or completed an equivalency degree. Nearly three-quarters of the women (72%) were single, never having been married. Over two-thirds of the women (72%) were currently unemployed, including those on disability. Table 3 provides an overview of the socio-demographic characteristics of the sample.

<i>Characteristic</i>	<i>n (%)</i>
Age, in years, m (\pm SD)	35.8 (\pm 13.3)
Menarche (age at 1 st period) in years, m (\pm SD)	12.5 (\pm 1.7)
Highest level of education attended	
Middle school	9 (4.9)
High school (or equivalency degree)	125 (68.3)
College / university / professional training	49 (26.7)
Current marital status	
Single, never married	132 (72.1)
Married or living with partner	16 (8.7)
Separated or divorced	34 (18.6)
Widowed	1 (0.5)
Current employment status (n=181)	
Full-time	25 (13.8)
Part-time	26 (14.4)
Unemployed / on disability	130 (71.8)

Survey – Food Insecurity and Menstrual Hygiene Insecurity

To gauge women’s economic status and ability to provide for their own basic needs, we asked a series of questions around food insecurity and then a set of parallel questions to assess menstrual hygiene challenges. Nearly 60% of women (59. 6%) either skipped a meal or ate a smaller meal than desired due to a lack of money for food over the past 12 months. Of these women, more than one-third (36%) had to skip or reduce meals on a monthly basis over the past year. Similarly, nearly two-thirds of women (64%) needed menstrual hygiene products at some point over the past 12 months but did not have money to purchase them. For over one-fifth of women (21%), this happened on a monthly basis (see Figure 1). Importantly, 46% of women struggled both to buy food and menstrual hygiene products during the past 12 months. Furthermore, there was no difference in menstrual hygiene need by age – both women younger than 30 years old and those over 30 years experienced a lack of money to buy menstrual hygiene products as needed, as well as had a similar frequency of doing so.

Figure 1. Skipping meals (n=109) and lack money to purchase menstrual hygiene products (n=117)



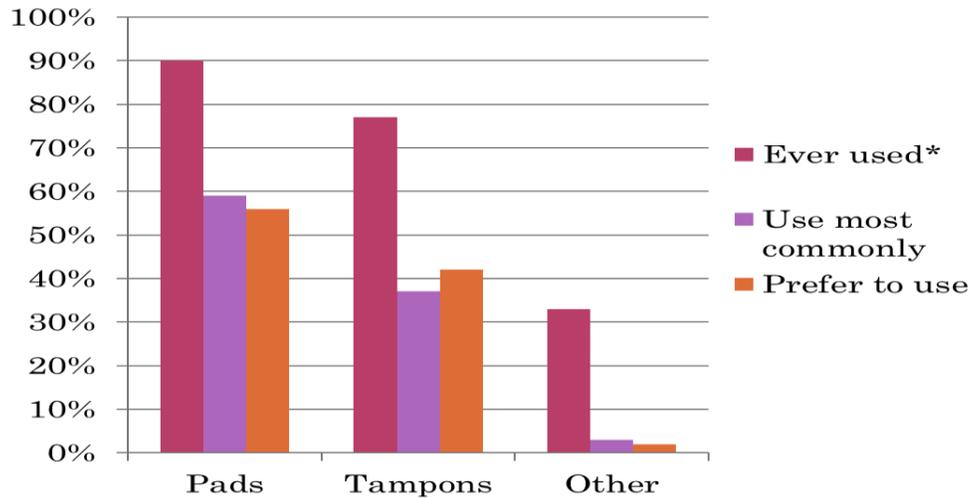
Survey – Menstrual Hygiene Management, Product Preferences, and Access

Most women are familiar with disposable pads (91%) and tampons (76%) for menstrual hygiene management. When asked what products they had ever used, however, one-third of women (33%) said they had used something other than disposable pads or tampons. Most commonly, women said they had used cloth / rags or tissue / toilet paper, but some women also mentioned having used their children’s diapers, adult diapers, or paper towels from public bathrooms. Only one woman mentioned ever having tried a menstrual cup; none had tried a reusable pad. The open-ended questions at the end of the survey about barriers to menstrual hygiene management and dealing with menstrual hygiene challenges elicited stories from additional women about ‘making do’, especially about using toilet paper or paper towels to create homemade or make-shift pads and tampons.

Over half of women (59%) use pads most often while another 38% of women use tampons most commonly. In terms of preference, 56% of women prefer to use pads while 42% prefer tampons. Women tend to be using the type of product that they prefer – 92% of those who prefer pads use them most frequently and 80% of those who prefer tampons use those most frequently. There was no difference by age (women younger than 30 years vs. those 30 years or older) in either most commonly used product or type of product preference. Figure 2 shows most common and preferred use by product type. In open-ended responses, many women who use pads expressed a strong preference for high absorbency or overnight pads to handle heavy flow as well as for pads with wings to protect their underwear (e.g., Always® Overnight Pads with Wings). Almost all women who use tampons preferred tampons with applicators; again, they expressed a preference for high absorbency. Tampon users also expressed a desire for disposable panty liners to use along with tampons in order to protect their

underwear from any leaks or spotting. Similarly, in open-ended responses a few women indicated that they are using birth control such as an injectable that causes them not to have regular periods. They said that they still experienced intermittent spotting, however, so that they needed disposable panty liners on a regular basis.

Figure 2. Ever use, most common use, and preferred product use by type of product, n = 183

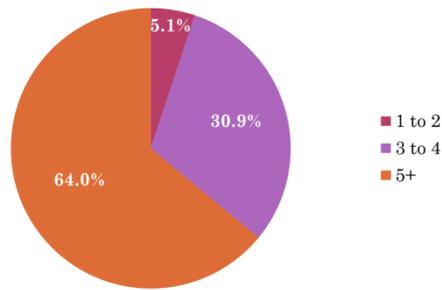


*NOTE: Ever use totals to greater than 100%

Bleeding during a typical menstrual cycle can last anywhere from three to seven days. While blood flow varies by day, nearly two-thirds of women (64%) reported needing to change their pads and/or tampons five or more times per day on the days of their heaviest flow (see Figure 3). This means that women may use between 15 and 35 (or more) pads and/or tampons per menstrual cycle. There was no difference by age category (women younger than 30 years vs. 30 years or older) in terms of frequency of change on days of heaviest flow.

Figure 3. Frequency of changing menstrual hygiene products on days of heaviest flow, n = 183

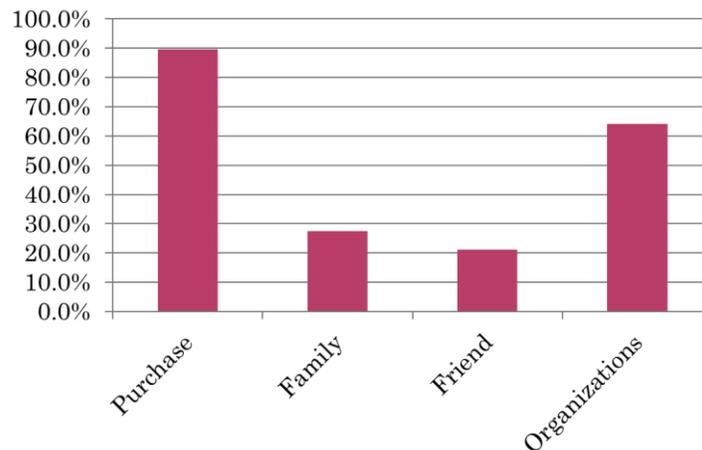
Frequency of change on heaviest days



Most women (89%) purchase their own menstrual hygiene products. Nearly two-thirds (63%) have relied, at some point, on donations from community service organizations, however. Some women also get menstrual hygiene products from other family members or friends (see Figure 4). In open-ended responses, women mentioned dollar stores (e.g., Family Dollar, Dollar General) and discount box stores (e.g., Walmart, Sav-A-Lot) as places where they tend to purchase their menstrual hygiene products.

Figure 4. Women's source of menstrual hygiene products, n = 183

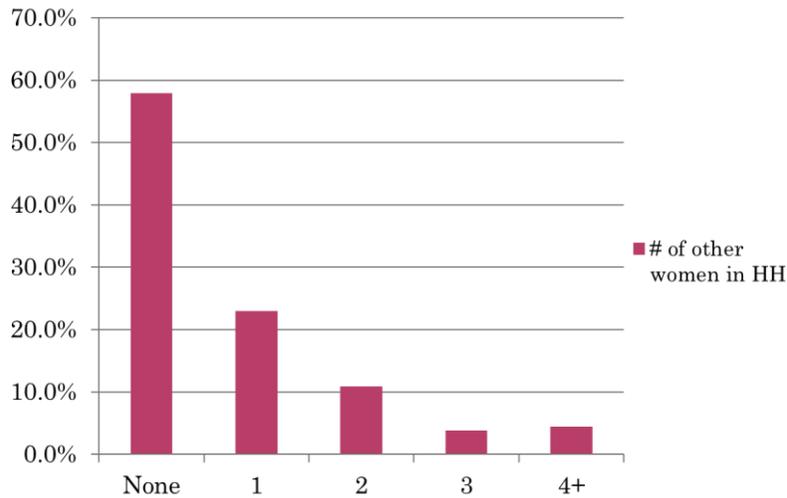
Source of products



Over half of the women (58%) were the only person in their household who currently has a menstrual cycle. For women who live in households with other women who are old enough to menstruate (42%) (see Figure 5), these other women can, at times, be a resource for women to get menstrual hygiene products when they might be out themselves. Several women described living with their mom or sister, who always had products available that they could use. On the other hand, living with other menstruating women in the household can also be an additional stressor as it means more women who need menstrual hygiene products every month. Other women spoke of the challenge of having enough

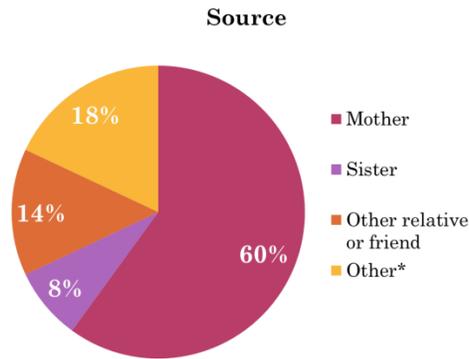
menstrual hygiene products for both them and their teenage daughter(s). In these situations, women might ‘make do’ with toilet paper or tissue while buying products for their daughter(s) to use. The cost of buying menstrual hygiene products for multiple women in a household accumulates quickly and can exacerbate the challenges of menstrual hygiene for women.

Figure 5. Number of other women in the household who are old enough to menstruate, n = 183



Women were asked who their main source of information about menstruation, menstrual hygiene products, and self-care was when they first started their periods. Over half of the women (60%) said that their mom was their main source of information (see Figure 6). ‘Other’ was the next most common response (18%), and most often was specified as school or self-taught. The most common advice or type of information that women got from their mothers was about menstrual hygiene products – what they are and how to use them (88%) and how to dispose of them (80%). Fewer women, but still the majority, learned about the cause of menstruation (59%) from their main source. There was no difference by age category (women younger than 30 years vs. those 30 years or older) for main source of information.

Figure 6. Main source of information about menstrual hygiene when periods first started, n = 183



*NOTE: 'Other' includes school and self-taught as most frequent responses

While only 28% of the women were working full- or part-time when surveyed, over a third of those women (36%) missed one or more days of work per month due to their periods, particularly as a result of cramps and/or heavy flow. There was no difference between younger and older women in terms of days absent per month due to their periods.

Survey – Challenges and Suggestions

Open-ended questions at the end of the survey asked women first to describe any challenges they face in getting the menstrual hygiene products that they need and how they cope. The questions then asked what suggestions they had to help women like themselves around issues of menstrual hygiene. Beyond simply a lack of money to buy the menstrual hygiene products they need, the challenges that women described fell into three main categories: 1) heavy flow and the need for higher absorbency products, 2) transportation time and costs to get to stores that sell larger quantities at more affordable prices, and 3) broader issues of safety, security, and sanitation. Several women mentioned that due to heavy flow they need higher absorbency products. These women were grateful for the pads that are typically available through donations from community service organizations but said that they either go through these donated pads quickly due to low absorbency or that they have to 'double-up' and wear two pads at once to try to increase the absorbency – but then results in women having only half as many usable pads as they received. Other women talked about the time and expense required to use public transportation to reach big box stores such as Walmart where they can get packs with greater quantity at lower prices. Finally, talking to women about menstrual hygiene elicited comments about larger issues of safety, security, and sanitation. Women who are living on the streets often have no place to change their

menstrual hygiene products, especially at night when they said it is too dangerous to use a public portable toilet for fear of getting mugged or assaulted when exiting while it is dark. Some women described how they wait all night until they can get to a public restroom, day shelter, or soup kitchen during daylight hours to be able to change their menstrual hygiene products in a safe location. During the winter, this means that women may go 12-14 hours a night without using a bathroom or changing their pad or tampon because they feel it is not safe enough to use a public portable toilet.

In terms of suggestions, women had three main categories of suggestions that mirrored their challenges: 1) increase access to menstrual hygiene products, 2) increase education and awareness around menstrual hygiene, and 3) increase access to safe, secure public restrooms. For increased access to products, women recommended making a greater variety of sizes and absorbency levels available through donations. Currently, they said that most places that provide donated products provide a box with two generic, disposable pads of relatively low absorbency. These two pads are insufficient, especially when they have to double-up. Women also suggested increasing awareness within the community about where donated products are available so that women know where to go in times of need. Next, they suggested offering coupons to help make the cost of products purchased out-of-pocket more affordable.

Related to education and awareness, women expressed concern that other women, particularly teenagers and young women do not know enough about menstrual hygiene and self-care. This suggestion was particularly emphasized by women living in transitional housing situations where they live and share bathrooms with several other women. Women suggested boosting the menstrual hygiene education provided in schools since that is where such a large percentage of young women first learn about menstruation but also to boost education and awareness opportunities provided through community service organizations.

Several women, especially those living on the streets, emphasized the need for more access to safe, secure public restrooms in general, not just for menstrual hygiene but for their personal hygiene and sanitation needs in general. They know that their personal hygiene suffers by not having access to a toilet and sink on a regular basis. They lamented that some of the organizations that distribute hygiene products to homeless individuals do not include menstrual hygiene products, and they desired safe access to a bathroom on a regular basis.

Finally, women were asked about whether they would be willing to try reusable pads for menstrual hygiene (similar to reusable diapers for babies). About half the women who were asked said they would be willing to try reusable pads, especially if the pads came as part of a kit with underwear and possibly laundry soap. Most of the other women had a strong reaction saying that they absolutely could not imagine trying reusable pads. Women who said they would be willing to try reusable pads appreciated that having such pads would mean not having the expense of purchasing disposable products for 18 months or more.

Focus Group Discussions

Seventeen women across three organizations participated in the focus group discussions. Their experiences and concerns around menstrual hygiene mirrored many of the results from the survey interviews, including a mix of product preference type and concerns with logistical issues for accessing products. As with women in the survey, during the focus groups there was a mixture of preferences expressed for disposable pads and tampons along with numerous stories about ‘making do’ with tissue, toilet paper, and paper towels. In the focus groups, a substantial number of women who preferred pads expressed concerns about the safety of tampons – either because they themselves or someone they knew had a previous bad experience with a tampon being inserted improperly, having been left in too long, having caused an infection or irritation, etc. These women had a strong preference for using pads and only pads.

Toilet paper is just as good as an Always if I am out and I don't have anything. – Woman #2 in FGD3

I purchase for myself and my daughter. Sometimes I forget when I am out. I have 5 kids and different ages. So, I focus on them. Sometimes I use toilet paper in emergencies. – Woman #5 in FGD3

I don't use tampons because I got toxic shock. I use napkins with wings, because I prefer to stay clean. – Woman #4 in FGD3

I use pads. Lost a tampon. And had a bad odor. Had to go to the doctor. Had to hospitalize me to get it out. – Woman #2 in FGD3

In terms of ‘making do’, a couple of women in the focus groups shared stories of going to a hospital emergency room to get pads when they felt they had no other source. The women said that the hospital would give them the underwear and pads used for post-partum women. The women liked that these pads are very high absorbency. A handful of other women shared that have had to steal pads or

tampons at times as a last resort when they had no money and no place to get menstrual hygiene products.

In terms of logistical issues, the focus group discussants went into more depth, both in terms of challenges and potential solutions, than did the women who were surveyed. The overarching theme of the women's concerns was the high-cost of menstrual hygiene products. Specific concerns included their frustration that WIC (Women, Infants, and Children) and SNAP (Supplemental Nutrition Assistance Program, formerly known as food stamps) benefits cannot be used for menstrual hygiene products, even though they are a necessity for women. Similar frustrations were expressed about the taxation of menstrual hygiene products at the full sales tax rate, not even at the lower food tax rate.

We need a tax write off ... Men's stuff is cheaper than women's. Food stamps don't buy toilet paper or feminine hygiene products. – Woman #1 in FGD1

There should be a WIC or food stamps voucher for feminine hygiene products. – Woman #5 in FGD1

They should pass a law where everyone has to offer them super cheap. Should be mandatory [in public restrooms] like toilet paper. – Woman #3 in FGD1

An additional frustration expressed by the women in the focus groups was the transportation difficulty of getting to discount big box stores such as Walmart where they could buy larger quantities of menstrual hygiene products per package at a lower cost than they could at closer convenience stores or grocery stores. As illustrated in the quote below, several women explained that it may take two or more buses and around an hour each way to reach such a store. Searches on the Trip Planner feature on the Metro Link website (<https://www.metrostlouis.org/trip-planner/>) using the locations of a couple community organizations where we surveyed the most women and the Google Maps addresses for several Walmart stores in the St. Louis metropolitan area confirm this transportation challenge. Women further explained that with two transfers on the route the 2-hour window for the transfer ticket can expire if one or more buses are late or missed. If the transfer expires, then women are forced to buy a new ticket mid-route which can raise the price of the trip one-way from \$3 to \$6. The extra \$3 is about equivalent to the cost of a 60-count pack of panty liners at Walmart.

Money to get supplies can become tight. The bus is \$3 with a 2 hour transfer and that is not enough time. Sometimes the transfer runs out. Sometimes you get lucky and get an extra hour. The bus takes 45 minutes [meaning the bus arrives at the stop every 45 minutes]. If you miss your bus then the wait will put you over the 2 hour transfer and then you have to pay another \$3.

Then you need to get the cheapest thing you can find so you have money for the bus. – Woman #6 in FGD1

Women in the focus groups had practical suggestions for what would help address their needs; these suggestions mirrored their concerns and challenges. First, women suggested that menstrual hygiene products either not be taxed at all (preferred) or only be taxed at the lower food-rate in order to make the products somewhat more affordable. Second, women suggested that the WIC and/or SNAP programs be modified so that benefits could be spent on menstrual hygiene products since these products are necessities for women. Third, they suggested that the time allotted for a transfer on a Metro ticket be extended to allow for late or missed connections on trips that require multiple transfers. Extending the transfer time per ticket would make locations where women can buy larger quantities of menstrual hygiene products at lower prices more readily accessible and would allow women to spend a greater proportion of their disposable income on necessities like menstrual hygiene products instead of on transportation.

Electronic Survey of Organizations

The 18 organizations that completed the electronic survey provide services ranging from food and shelter to crisis intervention to utilities and transportation assistance to educational support. Around two-thirds of these organizations serve women in both the south city and north city neighborhoods of St. Louis City; some also provide services for women from St. Louis County and the surrounding areas. Of these 18 organizations, 66% indicated that their clients have expressed needs around menstrual hygiene. Consistent with our findings from the survey interviews and the focus group discussions, the most prevalent expressed needs were around the affordability and accessibility of menstrual hygiene products. Most of these organization said that menstrual hygiene was a moderate concern for their clients relative to their other needs. Thirteen of the organizations provide menstrual hygiene products for their clients, but about half of these organizations only have menstrual hygiene products available intermittently (i.e., they provide products when they can but do not always have them available). Again, about half of the organizations that provide menstrual hygiene products do so through purchase of products with their budgeted funds, as opposed to relying on product donations. Only two of the 18 organizations that completed the survey indicated that they provide any type of menstrual hygiene awareness or education to their clients.

As with the surveys and focus groups, most organizations said that their clients' preference for menstrual hygiene products is a mix of disposable pads and tampons, while a few organizations said their clients have a slight preference for pads. Several organizations responded that their clients prefer brand name products for the better quality and greater absorbency that these products typically provide. Almost all the organizations that responded said that they are interested in / willing to discuss how to address any menstrual hygiene needs identified through this assessment.

V. CONCLUSIONS

Most women in society can identify with having to 'make do' with toilet paper or tissue for a few hours when they are caught off guard by the start of their menstrual flow or run out of products. But, for the women who participated in this needs assessment, they are often forced to 'make do' all day, for their entire cycle, and often every month. The participating women tended to be single, never having been married, often with pre-school or school-aged children, who have limited education and are unemployed or under-employed. The majority of participating women had experienced food insecurity over the past year and nearly two-thirds had been unable to afford menstrual hygiene products when they needed them. These women are struggling to provide for their own basic needs, including their menstrual hygiene needs. This assessment has documented that low-income women in St. Louis do have significant unmet needs related to menstrual hygiene. The rate of need documented here is much higher in this segment of the population in St. Louis than U by Kotex found in a survey of the general population (25%) in preparation for a national donation partnership (Kimberly Clark, 2018).

The experiences documented in this needs assessment are consistent between those that participated in the surveys, those in the focus groups, and the community service organizations that responded to the electronic survey. Women buy disposable products when they can but are often forced to rely on donations and/or to create make-shift pads and tampons for themselves, mostly out of toilet paper, tissue, or paper towels but also out of their kids' diapers, old socks, ripped t-shirts, or rags. When women with limited income are forced to make choices about their own needs versus those of their children, they often prioritize their children's needs, i.e., they will purchase diapers first and then get menstrual hygiene products for themselves if money remains.

Based on this assessment, women's product type preferences are split relatively evenly between disposable pads and tampons, with slightly more women preferring pads. Regardless of preference for

pads or tampons, however, women prefer high-absorbency varieties to handle heavy flow and to last as long as possible. Those who prefer pads tend to like pads with wings while those who prefer tampons tend to prefer tampons with applicators plus liners. Women with spotty or unpredictable periods due to birth control or other medical conditions use panty liners, so even if they do not need as many or as high absorbency products as women with regular periods they still need menstrual hygiene products frequently. There do not appear to be differences in product type preferences by women's age.

Women's barriers to menstrual hygiene extend beyond just a lack of money to purchase products but also include issues of transportation and safe access to bathrooms. While expanding availability of products through donations and distribution by community service organizations is one strategy to address menstrual hygiene needs, the women participating in this assessment also had practical suggestions for other ways to improve menstrual hygiene and increase access to products. Their suggestions included increasing the affordability of products through decreasing the tax rate on and providing coupons for menstrual hygiene products, increasing accessibility to less expensive products via extending the allowable transfer time on Metro Transit tickets, and increasing accommodation of women's preferences through having a greater variety product types, sizes, and absorbencies available through community service organizations. In addition, they focused on broader issues of safety, security, and sanitation by discussing the limited access to safe bathrooms for homeless women after dark. Finally, women emphasized the need to increase both education about menstrual hygiene and awareness of where to access menstrual hygiene products, especially for teenage and young adult women.

Responses from the community service organizations that completed the electronic survey confirm that many of their clients have expressed needs around menstrual hygiene. Many of the organizations are already doing what they can to help address these needs, mostly by providing menstrual hygiene products to clients as needed. Several of the organizations that do have products available only have them available intermittently, however. There is not yet a coordinated or systematic mechanism in St. Louis for distributing menstrual hygiene products and increasing low-income women's accessibility to this basic need. There is an even greater unmet need around menstrual hygiene awareness and education as the assessment documented only two organizations explicitly providing this information.

Strengths and Limitations

To the best of our knowledge, this is the first such systematic assessment of menstrual hygiene needs among low-resource women in the St. Louis area. It may even be the first of its kind in a major metropolitan area in the United States as a search of the major public health research databases did not identify any others. Moreover, the assessment strove to gather perspectives from both women who may be facing menstrual hygiene challenges themselves as well as from community organizations that provide services that women use. And, we collected both quantifiable data and open-ended, qualitative data to document women's experiences, needs, perspectives, and suggestions.

Several important limitations of this needs assessment must be recognized, however. First, we used a purposive sampling strategy to recruit women through community service organizations interested in partnering on this project. Therefore, all the women we sampled were already receiving some type of support services from one or more of these organizations. As a result, their circumstances may be relatively better off than women we were not able to recruit who are not receiving any support at all. If this is the case, then our estimates of need around menstrual hygiene for this segment of the population may be conservative. Second, interviewer-administered surveys and focus group discussions can be prone to social desirability bias, i.e., the respondent answering what s/he thinks the interviewer expects to hear. We tried to minimize social desirability bias by using all female interviewers (who themselves must manage their monthly periods) and by conducting all the surveys and focus groups in private spaces within the community service organizations. The consistency of responses between the survey interviews, the focus group discussions, and the electronic surveys as well as the detail that women provided in describing the challenges they have experienced, how they 'make do', and their recommendations for helping women like them suggest minimal social desirability in the responses, however. Finally, the main survey item about the consequences of poor menstrual hygiene focused on school/work days missed per month due to a woman's period. Since most women surveyed were unemployed or on disability, this question was not relevant to most participants.

Recommendations and Additional Research

Based on the results of this needs assessment, there are several recommendations to consider that could help improve the menstrual hygiene situation for low-resource women in the St. Louis area:

1. Develop a coordinated network to distribute donated menstrual hygiene products of a variety of sizes, types and absorbencies on a regular basis to community service organizations that then provide them to low-income women;
2. Create a community resources directory, or add information to an existing one, that includes information on where women can access menstrual hygiene products;
3. Provide more education and awareness around menstrual hygiene specifically and personal hygiene in general, including classes through community service organizations and brochures or booklets to be distributed along with donated products;
4. Follow-up with safety net hospitals in the area to verify whether they see women using the emergency room solely because of menstrual hygiene problems, and, if so, consider how to address this issue;
5. Advocate for lowering the tax on menstrual hygiene products to that of food-tax rates, as has been done in other U.S. states;
6. Advocate for extending the time allotted for a transfer ticket on the Metro system in St. Louis in order to make discount box stores more accessible to low-income women; and
7. Advocate for better access to safe, public restrooms for women at all hours of the day and night.

Additional research opportunities around menstrual hygiene in St. Louis include:

- Conducting a ‘women’s resources audit’ to document the cost of menstrual hygiene products and diapers at stores located in some of the most impoverished neighborhoods of both north and south St. Louis City;
- Exploring the menstrual hygiene situation – including awareness, education, and needs – for pre-teen and teenage girls in school settings where a high proportion of students receive free or reduced-price lunch; and
- Understanding the menstrual hygiene situation of and any differences in needs for recent immigrants and refugees to the St. Louis area who may come from environments where they are unfamiliar with the multitude of disposable products and brands available at stores in the U.S. and who may be disconnected from their traditional female support system.

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