

Menstrual Hygiene Product Affordability and Accessibility for U.S. Individuals

A Report to the House Committee on Appropriations



U.S. Department of Health and Human Services
Office of the Secretary
Office on Women's Health

Table of Contents

I. Executive Summary	3
II. Background	4
III. Product Usage and Type Preferences among U.S. individuals	5
IV. Gaps in affordability and accessibility as evidenced by current research	7
<i>Affordability and product usage preferences</i>	7
<i>Availability and accessibility of menstrual hygiene products within schools</i>	8
<i>Special populations that should be considered for further research</i>	9
V. Mental Health Impacts from Menstrual Product Insecurity	9
VI. Policies impacting availability of menstrual products	10
State Policies	10
<i>Tampon Tax</i>	10
<i>Provision of menstrual products in institutions, particularly public schools, colleges, and universities</i>	10
Federal Policies	10
<i>FDA Policies</i>	10
<i>Menstrual Products as Qualifying Medical Expenses</i>	11
VII. Conclusion	12
VIII. Appendix	12
IX. References	13

I. Executive Summary

In its reports on the fiscal years (FY) 2021 and 2020 appropriations bills for the U.S. Department of Health and Human Services (HHS), the House Committee on Appropriations stated the following:

“Menstrual Hygiene Products.--The Committee is concerned with the lack of data on the usage of--and preferences for--different types of menstrual hygiene products, which are basic health care necessities. The Committee directs the Office on Women's Health to commission a study on the usage of, type, preferences, and frequency in changing of different menstrual hygiene products by race and socioeconomic status. The Committee directs the Office on Women's Health to commission the study in time to be submitted to Congress no later than 180 days after enactment of this Act.” (H.R. Rep. No. 116-62)

“Menstrual Hygiene Products.--The Committee is concerned with the affordability and accessibility of menstrual hygiene products and information regarding these products, which are basic health care necessities. Per the report requested in House Report 116-62, the Committee encourages the Office on Women's Health to include in the report the number of individuals who experience problems with affordability and accessibility of menstrual hygiene products by race, socioeconomic status, and age. The Committee encourages OWH to include in the study an assessment of the availability and accessibility of menstrual hygiene products within institutions, including public schools, colleges, and universities, and provide a price comparison on fair market costs of menstrual products.” (H.R. Rep. No. 116-450)

This report has been prepared by the HHS Office on Women’s Health (OWH) in response to these requests.

Key Highlights:

- Research – conducted before the current product shortage – shows that 64 percent of low-income women were unable to afford menstrual supplies at some point over a year’s time, and for 21 percent of respondents this recurred regularly. In addition, one-third of the participants resorted to strips of cloth, rags, tissues, paper towels, toilet paper, or repurposed baby or adult diapers in place of tampons or pads.³
- Product usage and preferences vary by race, ethnicity, socioeconomic status, and age with more research needed among people who are underserved and live in high-risk settings, particularly unhoused and incarcerated individuals.
- There is no federal policy recommending that U.S. schools offer menstrual products to students. According to recent reports, increased school absences significantly correlate with schools not offering menstrual products.⁴
- Among university students, the frequency of being unable to afford sanitary products has been found to be significantly associated with depression on a gradient.⁵
- “Gendering” of menstrual products—i.e., labeling them as “feminine” products — and the lack of menstrual products in public restrooms for transgender men pose additional accessibility challenges.⁶

II. Background

The COVID-19 pandemic and ensuing inflation have profoundly impacted the price and availability of menstrual products, putting the most vulnerable at even greater risk of going without these necessities. Although a full range of menstrual products have been available in the United States (**Table 1**),⁷ cost barriers persist.

In addition, the average price for menstrual products as of June 18, 2022 was 8-10 percent higher than one year ago, according to NielsenIQ.¹ The company's total U.S. market data shows the average price of a box of tampons rose 10.4 percent and total units sold decreased 1 percent between June of 2021 and June 2022. In addition, the average price of menstrual pads and liners increased 8.7 percent and 9.3 percent, respectively, over that same period. According to a recent Bloomberg article,⁸ some of the reasons for the price increases include higher prices for plastic resins, cotton, and materials, which increased between 9.5 percent and 40 percent in the past year, stressed supply chains, and a 70 percent increase in the cost of oil, which is used to make plastics and super-absorbents.

Table 1. Menstrual Products Cleared by FDA for U.S. Market*

Tampons (avg. price: \$7.21)¹

Super tampons with applicator
 Super tampons without applicator
 Regular tampons with applicator
 Regular tampons without applicator
 Light tampons with applicator
 Light tampons without applicator

Cups (avg. cost: \$20-\$40)²

Reusable menstrual cup
 Disposable menstrual cup

Sanitary pads (avg. price: \$6.45) and liners (avg. price: \$3.64)¹

Reusable pads
 Disposable Super pads
 Disposable Regular pads
 Disposable Light days pads
 Menstrual underwear

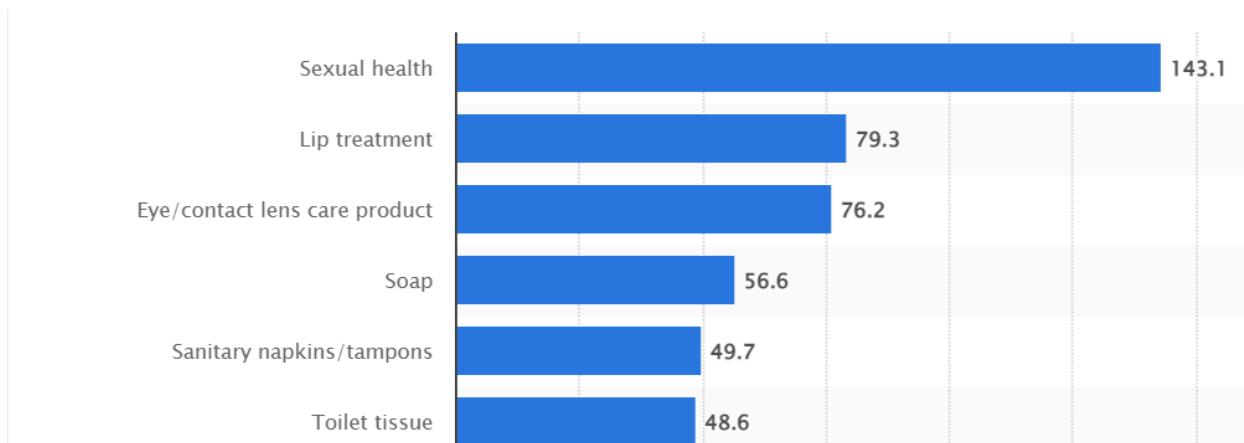
Legend

* Items fall under the Food and Drug Administration (FDA) category that requires premarket notification through a 501(k) submission. All products available without prescription. "Super," "Regular," and "Light," denote degree of absorbency from higher to lower.

The recent shortage and price increases in menstrual products come on the heels of data demonstrating the pandemic's impact on the menstrual product market as early as 2020. According to a Statista survey, 64 percent of Americans shifted to online purchases during the pandemic. Twenty-five percent of respondents reported they shifted to online purchases of hygiene products compared to 27 percent for restaurant delivery/takeout and 26 percent for food and drink delivery.⁹

Worldwide revenue for menstrual products was \$42.2 billion in 2021. Globally, the United States had the highest annual revenue per capita at 12.5 percent.¹⁰ Of note, menstrual pads and tampons accounted for 15 percent of the worldwide revenue share of the tissue and hygiene paper market in 2021, according to the Statista Consumer Market Outlook.¹⁰ Other segments of this market include toilet paper (32 percent), diapers (17 percent), paper tissues (5 percent), and incontinence products (5 percent). Statista also reported sanitary napkins/tampons sales in U.S. convenience stores alone were over \$49.7 million for that calendar year (**Chart 1**).¹¹

Chart 1. Dollar sales of personal care products in U.S. convenience stores in 2021, by segment
(in million U.S. dollars)



III. Product Usage and Type Preferences among U.S. individuals

To obtain menstrual hygiene product usage data, OWH contracted with MRI-Simmons, a joint venture between two of the largest consumer survey companies in the United States. MRI-Simmons conducted a single-source market research survey designed to provide a multidimensional picture of U.S. consumers. The MRI survey of the American consumer was fielded to a representative sample of U.S. adults aged 18 or older. For the purposes of this report, MRI-Simmons created a one-time data file from the 2020 MRI Double-base Study that included an analysis of menstrual hygiene products (tampons, sanitary napkins, and menstrual underwear/sponge/cup) usage by age, race, and household income.¹²

Among women aged 18-24 who reported they had used feminine hygiene products in the last six months, 53 percent used tampons, 50 percent used sanitary napkins, 5 percent used a menstrual cup, 2 percent used menstrual underwear, and less than 1 percent used a menstrual sponge (**Table 2**). Totals are greater than 100 percent due to women using more than one product type during menstruation. More women aged 35-44 used sanitary napkins (52 percent) than tampons (47 percent), and among women aged 25-34, more than half reported use of tampons (51 percent) and sanitary napkins (52 percent). As indicated in the table, data was collected between 2018-2020, prior to the recent reports of menstrual product shortages.

In terms of product usage by race, 48 percent of survey respondents who selected either American Indian, Alaska Native, Asian, Other, or multiple races used sanitary napkins compared to 27 percent who used tampons. Black/African American women also reported greater use of sanitary napkins (43 percent) than tampons (27 percent), while White women

reported similar usage of tampons (25 percent) and sanitary napkins (26 percent). Additional segmented data is included in the **Appendix**.

Across all household incomes, more women used sanitary napkins than tampons. Tampon use was the highest among those reporting household incomes greater than \$75,000 and less than \$10,000.

Table 2. Feminine Hygiene Product Use During the past 6 Months Among U.S. Women MRI-Simmons Survey of Women aged 18+, 2018-2020 (n=25,937)

	Women (n)	Tampons (n=6696)	Sanitary napkins (n=8230)	Menstrual underwear (n=203)	Menstrual sponge (n=70)	Menstrual cup (n=547)
Age						
18-24	1,758	936 (53.24%)	874 (49.72%)	33 (1.88%)	11 (0.63%)	84 (4.78%)
25-34	4,020	2037 (50.67%)	2078 (51.69%)	55 (1.37%)	19 (0.47%)	197 (4.90%)
35-44	4,692	2199 (46.87%)	2435 (51.90%)	56 (1.19%)	17 (0.36%)	177 (3.77%)
45-54	4,368	1124 (25.73%)	1563 (35.78%)	23 (0.53%)	9 (0.21%)	68 (1.56%)
55-64	4,679	273 (5.83%)	599 (12.80%)	21 (0.45%)	6 (0.13%)	17 (0.36%)
65+	6,420	127 (1.98%)	681 (10.61%)	15 (0.23%)	8 (0.12%)	4 (0.06%)
Race						
White only	18,358	4637 (25.26%)	4760 (25.93%)	114 (6.12%)	33 (0.18%)	380 (2.07%)
Black/African American Only	3,388	908 (26.80%)	1459 (43.06%)	43 (1.27%)	16 (0.47%)	58 (1.71%)
Other race/multiple classifications*	4,191	1151 (27.46%)	2011 (47.98%)	46 (1.10%)	21 (0.50%)	109 (2.60%)
Household income (U.S. dollars, \$)						
0-9999	1,196	321 (26.84%)	436 (36.45%)	24 (2.01%)	12 (1.00%)	24 (2.01%)
10000-19999	1,751	300 (17.13%)	532 (30.38%)	15 (0.86%)	7 (0.40%)	17 (0.97%)
20000-29999	2,205	409 (18.55%)	678 (30.75%)	18 (0.82%)	6 (0.27%)	22 (1.00%)
30000-39999	2,279	490 (21.50%)	686 (30.10%)	15 (0.66%)	14 (0.61%)	37 (1.62%)
40000-49999	2,380	545 (22.90%)	730 (30.67%)	9 (0.38%)	8 (0.34%)	28 (1.18%)
50000-74999	4,780	1144 (23.93%)	1442 (30.17%)	33 (0.70%)	17 (0.36%)	109 (2.28%)
75000-99999	3,163	894 (28.26%)	981 (31.01%)	21 (0.66%)	3 (0.09%)	66 (2.09%)
100000+	8,183	2593 (31.69%)	2745 (33.55%)	68 (0.83%)	3 (0.04%)	244 (2.98%)
* MRI-Simmons created grouped classifications – "White Only," "Black/African American Only," and "Other Race/Multiple Classifications" – based on survey respondents' selections. These classifications are mutually exclusive and add up to the total sample of 25,937 women. "Other Race/Multiple Classifications" includes those who selected multiple races or American Indian, Alaska Native, Asian or Other. MRI-Simmons raw data						

segmented by race and ethnicity is included in the Appendix.

IV. Gaps in affordability and accessibility as evidenced by current research

To identify recent, peer-reviewed studies examining menstrual hygiene products, OWH conducted a systematic review. A search of PubMed, Scopus, and the Cumulative Index to Nursing and Allied Health databases resulted in 93 articles pertaining to menstrual cycle hygiene management and feminine hygiene product usage. The article abstracts were reviewed for relevance to the issues of accessibility and affordability, resulting in 53 articles. The same team reviewed and coded the articles for study purposes, use, and inclusion. The list expanded to include related articles and gray literature as encountered within those articles. Gray (or grey) literature, as defined by the National Institutes of Health Office of Research Services, is the term for information that falls outside the mainstream of published journal and monograph literature, not controlled by commercial publishers. This includes hard to find studies, reports, or dissertations; conference abstracts or papers; governmental or private sector research; and clinical trials - ongoing or unpublished.¹³ The narrative review below presents findings from articles published between January 2016 and December 2020, with articles predating this timeframe added for context. Accuracy of all internet references were verified in February 2021.

1. Affordability and product usage preferences

Researchers examining menstrual hygiene needs among low-income women served by not-for-profit community organizations in St. Louis³ illustrated gaps in affordability.

- 64 percent were unable to afford menstrual supplies at some point over a year's time, and for 21 percent of respondents this recurred regularly. There were no differences in problems with affordability by age.
- One-third of the participants resorted to strips of cloth, rags, tissues, paper towels, toilet paper or re-purposed baby or adult diapers in place of tampons or pads. This finding reflects results found in an international study conducted by U.S. researchers in Africa and Asia where cloth is a common solution when pads are not available.¹⁴

When participants in the St. Louis study were able to obtain menstrual products, pads were used most often (90.7 percent) and were preferred (55.7 percent). Tampons were used 76 percent of the time and preferred by 42 percent of participants. Only one person had tried a menstrual cup. The number of products used varied from 10-35 or more pads per menstrual cycle.

In 2012, University of California researchers surveyed 165 low-income women ages 18 to 35 years to determine product usage differences. The research team found European American women (71 percent) were significantly more likely to use tampons in adolescence compared to African American women (29 percent), Latina women whose preferred language was English (22 percent), and Latina women whose preferred language was Spanish (5 percent).¹⁵ The median annual income was \$15,000-\$25,000 for European American women and Latina women whose preferred language was English, and \$10,000-\$15,000 for African American women and Latina women whose preferred language was Spanish.

Research on the use of feminine hygiene products and reproductive health is limited. For example, the last known National Health and Nutrition Examination (NHANES) Survey to include questions about respondents' use of feminine hygiene products and reproductive health was the 2001-2004 survey.¹⁶ A University of Michigan research team analyzed the results of that survey in 2020; their analysis included self-reported use of tampons, sanitary napkins, vaginal douches, sprays, powders, wipes/towelettes, and other products by age, race/ethnicity, body mass index, and income. The researchers found product preferences by race/ethnicity in alignment with studies previously described in this report.¹⁷

2. Availability and accessibility of menstrual hygiene products within schools

The scientific literature also demonstrates affordability and accessibility challenges in school settings. Researchers conducting a national survey of 693 females ages 18-25 who had attended U.S. high schools⁴ found that only 42 percent of respondents attended schools providing menstrual hygiene products. The geographically diverse sample included 19 percent from the Northeast, 41 percent from the South, 22 percent from the Midwest, and 18 percent from the West. Most identified as White (74 percent) and almost half (48 percent) had a family income less than \$50,000. A notable 18 percent reported a family income less than \$25,000. The average age was 20.5 years and nearly 98 percent had graduated high school (88.6 percent at a public school).

- Most (92 percent) reported that they needed a new menstrual product while at school. Of those, 79 percent sometimes had backup supplies, yet 65 percent reported that they sometimes used toilet paper or paper towels instead of actual menstrual products. The latter was the case most often when the menses started during school (80 percent of participants).
- Because of a lack of access to menstrual hygiene products, almost 13 percent reported missing school, 15 percent reported being late to school and nearly 24 percent left school early, losing 1-2 days per school year.

On the question of whether inaccessible menstrual products affected their learning or health, only 18 percent indicated that it affected their learning, 69 percent said that it did not and 13 percent did not know. For those who reported an impact on their learning, 88 percent said worry about leakage from the menstrual product inhibited their ability to focus on instruction and/or material. Regarding health, only 8 percent reported that lack of access impacted their health, with 84 percent reporting no impact and 8 percent responding they did not know. The most common health impact was a general feeling of being sick.

The mental health impact of accessibility challenges among U.S. university students is described below in section V. *Mental Health Impacts from Menstrual Product Insecurity.*

In 2020, a cross-sectional quantitative survey¹⁸ was designed and implemented to assess the impact of menstruation on Australian university students' education. A total of 410 survey responses was available for analysis. Most students used a pad (65 percent) as their main product to manage menstruation with tampons (24 percent), menstrual cups (8 percent), and period underwear (2percent) also reported. Over one-fifth of students (22 percent) indicated that they do not change their menstrual products while at university. While most said this was due to

not needing to change products (63.6 percent), 18 percent reported not having replacement material(s) to use.

3. Special populations that should be considered for further research

Incarcerated and unhoused individuals encounter unique accessibility challenges; yet, there is a lack of scientific, peer-reviewed publications examining these challenges. Is proper hygiene available and incorporated into prisons and shelters for women? What unique challenges are they facing? What adverse gynecological outcomes, if any, are the result of a lack of proper menstrual hygiene products?

Accessibility challenges also are experienced in the setting of transgender and/or non-binary gender identity. One study⁶ identified three specific challenges – the gendering of menstrual products, challenges for transgender men in public restrooms, and bias in healthcare.

V. Mental Health Impacts from Menstrual Product Insecurity

It is well established that meeting one's basic needs - food, water, shelter - is necessary for health and well-being.^{19, 20} Research indicates that the inability to meet these needs can negatively affect individuals' mental health. Findings from a recent study⁵ examining the frequency of being unable to afford sanitary products among university students and associations with poor mental health revealed that "period poverty" was significantly associated with depression on a gradient. Compared to those who had never experienced period poverty, women who struggled to pay for menstrual products every month reported the most severe depression, followed by those who had experienced period poverty at least once in the past year. This study revealed that among women who reported experiencing period poverty every month, 68.1 percent reported symptoms consistent with moderate or severe depression, compared to 61.2 percent of women who had experienced any period poverty, and 43.4 percent of those who had not experienced period poverty.

Unadjusted analyses in **Table 4** (below)⁵ showed a significant relationship between past-year period poverty and moderate/severe depression and between experiencing period poverty every month and moderate/severe depression. These relationships remained significant in the adjusted analyses. In comparison to participants who reported no period poverty, young women who had experienced past-year period poverty or monthly period poverty were significantly more likely to report moderate/severe depression symptoms.

Table 4. Unadjusted and adjusted logistic regressions for associations between past-year and past-month period poverty and depression (N=471)

Experience of period poverty	None/minimal depression (%)	Moderate/severe depression (%)	Odds ratio (95% CI)	Adjusted odds ratio (95% CI)
No period poverty	56.6	43.4	Referent	Referent
Past-year any period poverty	38.8	61.2	2.05 (1.20–3.50)	1.83 (0.99–3.38)
Past-year monthly period poverty	31.9	68.1	2.78 (1.45–5.31)	2.34 (1.09–4.99)

AORs controlling for age, race, first generation student, US born, living situation, relationship status, enrollment, sexual orientation, self-rated health status

VI. Policies impacting availability of menstrual products

State Policies

1. Tampon Tax

Sales tax on menstrual products, nicknamed the “tampon tax,” represent additive costs for individuals. In recent years, more than a dozen states have introduced legislation to eliminate the tampon tax. An analysis of empirical evidence out of New Jersey demonstrates that repealing the tax made menstrual hygiene products cost less for consumers.²¹

2. Provision of menstrual products in institutions, particularly public schools, colleges, and universities

According to the Alliance for Period Supplies, an independently operated nonprofit, as of May 15, 2022, 17 states (Alabama, California, Colorado, Connecticut, Delaware, Hawaii, Illinois, Maine, Maryland, Nevada, New Hampshire, New York, Oregon, Rhode Island, Utah, Virginia, Washington) and Washington D.C. have passed legislation to ensure students who menstruate have free access to period products while in school. Georgia provides funding for period products in schools that choose to distribute products but does not require all schools to do so.²²

The City Council of Ann Arbor, Michigan, passed an ordinance on November 15, 2021, requiring all public restrooms in the 120,000-resident University of Michigan college community – including those located inside businesses – to offer pads and tampons for free, as well as toilet paper and soap.

Federal Policies and Regulations

1. Food and Drug Administration (FDA)

Menstrual products are available over the counter as Class I and Class II devices. Most Class I devices are exempt from FDA’s premarket notification (510(k) clearance) process, subject to certain limitations to exemption, while most Class II devices are subject to such clearance process. This clearance process is different from the premarket approval (PMA) process for high-risk, class III devices such as intrauterine devices. The guidance *Menstrual Tampons and Pads: Information for Premarket Notification Submissions (510(k)s)*, was issued in July 2005 with updates to incorporate the abbreviated 510(k) submission process.²³ The evidence-based policy provides guidance to include information about performance characteristics, component materials, additives, and labeling describing intended use and directions for its use. The guidance also states a 510(k) submission should include a risk analysis and mitigation measures.

A 510(k) is a premarket notification submission to the FDA to demonstrate that the device to be marketed is as safe and effective (or “substantially equivalent”), to a legally marketed¹ (or

¹ A legally marketed device is a device that was legally marketed prior to May 28, 1976 (preamendments device), or a device which has been reclassified from Class III to Class II or I, a device which has been found SE through the 510(k) process, or a device that was granted marketing authorization via the De Novo classification process under section 513(f)(2) of the FD&C Act that is not exempt from premarket notification requirements.

predicate) device (section 513(i)(1)(A) FD&C Act).²³ This means that before a product that is not exempt from premarket notification can be marketed in the United States, the 510(k) submission documents must be provided to FDA showing that the product either (1) has the same intended use as the predicate device and has the same technological characteristics as the predicate device or (2) has the same intended use as the predicate device and has different technological characteristics and the information submitted to FDA (a) does not raise different questions of safety and effectiveness than the predicate device and (b) demonstrates that the device is at least as safe and effective as the predicate device. In making this substantially equivalence determination, FDA considers, among other information, whether the proposed product is similar in design and function to existing (legally marketed) products. Menstrual tampons have additional labeling requirements related to Toxic Shock Syndrome in the Code of Federal Regulations Title 21.²⁴

Menstrual pads are Class I devices and are exempt from premarket notification if the device consists of common cellulosic and synthetic material with an established safety profile. Thus, premarket notification is not required before marketing such devices in the United States. However, manufacturers of such devices must register their company and submit a listing of the devices.

Menstrual tampons and cups are Class II devices. Menstrual tampons must obtain 510(k) clearance prior to marketing. Menstrual cups are exempt from premarket notification based on FDA's determination in accordance with procedures established by the 21st Century Cures Act of 2016 (Cures Act), but they are subject to certain limitations to exemption and to the so-called "general controls," which include, among others, Good Manufacturing Practice requirements. Regulation information is included in **Table 5**.²⁶

Regulation	Device
884.5400	Menstrual Cup
884.5460	Scented or Scented Deodorized Tampon
884.5470	Tampon, Menstrual, Unscented
884.5425	Scented or Scented Deodorized Menstrual Pad
884.5435	Unscented Menstrual Pad ²⁵

2. Menstrual Products as Qualifying Medical Expenses

The CARES Act (Coronavirus Aid, Relief, and Economic Security Act), P.L. 116-136, which became law on March 27, 2020,²⁷ re-defined menstrual products as a qualifying medical expense within the Internal Revenue Service (IRS) tax code. Section 3702 of this bill includes menstrual products as qualifying purchases under healthcare savings accounts, Archer medical savings accounts (MSAs), health flexible spending arrangements (FSAs), and health reimbursement arrangements (HRAs) – a significant policy change. Section 3702 expands the definition of qualified medical expenses for health savings accounts, health flexible spending arrangements, and health reimbursement arrangements to include menstrual care products. These include tampons, pads, liners, cups, sponges, or similar products. The amendment applies to expenses incurred after December 31, 2019.

VII. Conclusion

This report presents research and data pertaining to the use, affordability, and accessibility of menstrual hygiene products stratified by race, socioeconomic status, and age. It provides current information on costs of menstrual products and discusses the availability of menstrual hygiene products in institutions, including public schools, colleges, and universities. The report also highlights research demonstrating the impact of period poverty – or the inability to afford sanitary products – on mental health. Though a full range of menstrual products are available in the United States, cost barriers persist and should be addressed to ensure availability and accessibility of menstrual hygiene products.

VIII. Appendix

Appendix Table 1.
Survey Respondents Use of Feminine Hygiene Products in the Last Six Months
by Race and Ethnicity*
MRI-Simmons Survey of Women aged 18+, 2020 Doublebase Study

	Total Women 18+	TAMPONS	SANITARY NAPKINS	MENSTRUAL UNDERWEAR	MENSTRUAL SPONGE	MENSTRUAL CUP
RACE: WHITE	19,001	4,853	5,008	118	37	399
RACE: BLACK/AFRICAN AMERICAN	3,678	1,012	1,590	45	17	64
RACE: AMERICAN INDIAN OR ALASKA NATIVE	382	112	125	3	2	9
RACE: ASIAN	1,316	346	701	21	4	45
RACE: OTHER SPANISH OR HISPANIC ORIGIN OR DESCENT: YES	2,459	672	1,160	24	16	55
	3,518	1,030	1,664	42	23	70

*MRI-Simmons raw data included in this table; grouped classifications data are included in Section IV, Table 2 above.

IX. References

- [1] NielsenIQ RMS Data. Total US Market expanded all outlets combined. 2022.
- [2] Morris Susan York: The Best Menstrual Cups. Edited by Carolyn Kay MD. Healthline, 2022.
- [3] Sebert Kuhlmann A et. al: Unmet Menstrual Hygiene Needs Among Low-Income Women. Obstetrics and Gynecology 2019, 133:238-44.
- [4] Cotropia C.A. : Menstruation Management in United States Schools and Implications for Attendance, Academic Performance, and Health. Women's Reproductive Health 2019, 6:289-305.

- [5] Cardoso L.F., Scolese, A.M., Hamidaddin, A. et al: Period poverty and mental health implications among college-aged women in the United States. *BMC Women's Health* 2021, 21.
- [6] E. Frank S.: Queering Menstruation: Trans and Non-Binary Identity and Body Politics. *Sociological Inquiry* 2020, 90:371-404.
- [7] Statista: Average price per unit of feminine hygiene products in the United States in 2018, by category (in U.S. dollars). 2022.
- [8] Sirtori-Cortina Daniela, Olivia Rockeman: It's Getting More Expensive to Have Your Period, Thanks to Inflation. *Bloomberg US Edition* 2022.
- [9] Statista: COVID-19 Barometer 2020. 2020.
- [10] Statista: Feminine Hygiene Report 2022. 2022.
- [11] Statista: Dollar sales of personal care products in U.S. C-stores 2021, by segment. 2022.
- [12] MRI-Simmons: Analysis of menstrual hygiene products (tampons, sanitary napkins, and menstrual underwear/sponge/cup) usage by age, race, and household income. MRI-Simmons, 2021.
- [13] Services National Institutes of Health Office of Research: Literature Search: Databases and Gray Literature. 2022.
- [14] Smith A. D., et al: National Monitoring for Menstrual Health and Hygiene: Is the Type of Menstrual Material Used Indicative of Needs Across 10 Countries? *17* 2020, 8:2633.
- [15] Romo LF Berenson AB: Tampon use in adolescence: differences among European American, African American and Latina women in practices, concerns, and barriers. *Journal of Pediatric Adolescent Gynecology* 2012, 25.
- [16] Centers for Disease Control and Prevention: 2003-2004 Data Documentation, Codebook, and Frequencies. 2006.
- [17] Ding N Batterman S, Park SK: Exposure to Volatile Organic Compounds and Use of Feminine Hygiene Products Among Reproductive-Aged Women in the United States. *Journal of Women's Health* 2020, 29:65-73.
- [18] Munro Alana K. Melanie Keep, Erin C. Hunter, et. al: Confidence to manage menstruation among university students in Australia: Evidence from a cross-sectional survey. *Womens Health (London)* 2022, 18.
- [19] Gundersen C Ziliak JP: Food insecurity and health outcomes. *Health Affairs* 2015, 34:1830-9.
- [20] Singh A Daniel L, Baker E, Bentley R. : Housing disadvantage and poor mental health: a systematic review. *American Journal of Preventative Medicine* 2019, 57:262–72.
- [21] Cotropia C. Rozema K. : Who Benefits from Repealing Tampon Taxes? Empirical Evidence from New Jersey. *Journal of Empirical Legal Studies* 2018, 620.
- [22] Alliance for Period Supplies: Period Products in Schools. 2022.
- [23] U.S. Food & Drug Administration: 501(k) Premarket Notification. 2019.
- [24] U.S. Food & Drug Administration: CFR - Code of Federal Regulations Title 21. 2022.
- [25] U.S. Food & Drug Administration: Medical Device Exemptions 510(k) and GMP Requirements. 2022.
- [26] U.S. Food & Drug Administration: How to Register and List. 2018.
- [27] Congress 116th: Coronavirus Aid, Relief, and Economic Security Act – H.R. 748. 2019-2022, Sec. 3702.
-