ARTH
Action Research and Training for Health

WHY INDIA NEEDS TO MOVE BEYOND DISPOSABLE SANITARY PADS

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This report encapsulates the work of a team of persons at Action Research & Training for Health (ARTH) who took menstrual cups to women in 480 villages and urban wards through a community based intervention after the inaugural on 11 July 2019 by Dr Vinaya Pendse (Former Head, Dept of Obsetrics & Gynecology, RNT Medical College, Udaipur) and Ms Usha Dangi (Up-Pradhan, Badgaon Panchayat Samiti, District Udaipur). The team included Sunita Soni and Pushpa Sen who undertook planning, training and supervision, Dolaram Gameti who mobilized young men, Indravadan Chawda and Pritam Singh who managed the supply chain, and Pramila Sharma who designed and tested communication materials. A team of women community mobilizers and supervisors -- Meera Gameti, Kamala Prajapat, Kanchan Suthar, Meena Trivedi, Sugana Gameti, Anita Mewara, Shanta Ameta, Kamla Meghwal, Tulsi Gayari, Sunita Ameta, Laxita Ameta, Seema Meghwal worked hard on field to identify community health entrepreneurs and to train and support them in their roles. They also met menstrual cup purchasers to guide and support them, and to gather feedback regarding use.

Snehal Sinha designed the report, Syed Ashraful Islam carried out DTP and Riya Hiran took photographs in the community. We wish to record our gratitude to Prof TK Sundari Ravindran (AMCHSS, Trivandrum) and Dr Kirti Iyengar for having reviewed and commented on a draft of this report.

Last but not the least, we would also like to record our appreciation for the enthusiasm and energetic participation by women in the community - they were very receptive to considering alternative ways to improve their health and well being and gave valuable feedback that guided the intervention as it rolled out. We dedicate this report to the thousands of women who tried out menstrual cups and encouraged others to do so in good faith, thereby providing us a mirror on its use and effectiveness in a low resource community setting.

Authors

Executive Summary

Background

India's fourth and fifth National Family Health Surveys reveal that disposable sanitary napkins are increasingly being used by a majority of young women (15-24 years) for menstrual protection. Greater market penetration, aspirational brand marketing, and government supported free or subsidized distribution have contributed to progressive increase in the use of sanitary napkins across the country, including rural areas. A review of central and state government menstrual hygiene interventions confirms that access to menstrual protection translates into the large scale introduction of disposable sanitary pads. Although international guidelines do provide for alternatives such as tampons or menstrual cups, training and communication interventions for Indian target groups focus almost exclusively on sanitary pads.

Menstrual cups: the lesser known alternative

A menstrual cup is a flexible, bell-shaped device made of inert medical-grade silicone that does not alter the vaginal microbiome or pH, and hence does not increase chances of infection or cause allergy. A woman can place it inside her vagina where it fits firmly and collects blood. The cup can be reused during each cycle for 5 to 10 years, making it sustainable and environment friendly as compared to disposable options. In 2019, the Lancet published a systematic review that found menstrual cups to be a safe and an effective menstrual hygiene management option. Thus far, there has been limited acceptance of menstrual cups in India — they are currently preferred by a small fringe comprising of internet-enabled young urban women. Recently, there have been efforts to introduce menstrual cups in districts of Kerala and Karnataka.

The environmental impact of menstrual hygiene products

Although sanitary pads are a highly effective modern option for menstrual hygiene, the disposal of used pads remains a problem, because it can lead to negative environmental and public health consequences. Notwithstanding legal provisions and arrangements for solid waste management in a few cities, the problem of menstrual waste remains

unaddressed in most towns and rural areas. The use of polymers in sanitary napkins renders them 49% non-biodegradable. While oxo-biodegradable pads are available in the Indian market, their initial degradation releases microplastics which remain in the environment for years until they biodegrade, thereby calling into question their environmental sustainability. Tampons, an expensive and hence less popular disposable option, are made of 10% non-biodegradable material. The silicone menstrual cup is completely non-biodegradable, but does not break down into microplastics and can be recycled after use over 5 to 10 years. It therefore has lower environmental impact than disposable pads and tampons. Estimates of the total and non-biodegradable waste generated by a single user over the course of her lifetime indicate that use of disposable sanitary pads, tampons or menstrual cups would respectively generate 28.8 kg, 7.2 kg or 0.06 kg of waste. Use of menstrual cups would generate 0.2% of total lifetime waste and 0.4% of non-biodegradable lifetime waste compared to disposable sanitary pads. Hence opting for menstrual cups instead of disposable pads could lead to over 99% reduction in the generation of non-biodegradable waste attributable to menses.

Introduction of menstrual cups in rural-tribal Rajasthan

Action Research & Training for Health (ARTH) Society, a non-profit public health organisation, introduced menstrual cups for rural – tribal women of southern Rajasthan in 2019 through a network of trained Community Health Entrepreneurs (CHEs) who promoted and sold them, while also guiding new users. The product was named *RituCup* (in reference to *RituKaal* or menstruation in Sanskrit, and *Ritu* or season in Hindi, because it was intended to be an all-season option). Over three and a half years, 5,695 menstrual cups were purchased by women in a community of 550,000 in two districts of the state.

We gathered feedback from 60 women who had used menstrual cups, to acquire insight into their acceptability. Fifty eight of 60 women who could be contacted four months later, gave the menstrual cup an overall rating of 4 out of 5 points for ease of insertion, usage, removal, cleaning and storage. Field staff separately met with 784 women who had purchased cups, to gather feedback and support correct use. They found that 84.4% of those who bought the cup had used it over their last three cycles. They included 109 adolescent purchasers, of whom 83.5% used the cup, while the rest had continued with pads, cloth pieces, or a combination of the two. The large majority (78%) of 2,352 periods among these 784 women had been protected by menstrual cups. This suggests that once women acquire a menstrual cup and receive guidance over the subsequent months, most commence using it, eventually relying on it as the sole menstrual hygiene option. In the words of an illiterate 27 year old woman, *'Now that I use the cup, nobody knows when I am on my period'.*

About 55% of CHEs who had previously been trained and provided with cups for onward sale, opted to use menstrual cups for themselves. Given the prevailing market share of other menstrual hygiene products, this is an indicator of the potential popularity of the menstrual cup among women in similar rural areas, were they to have easy access and

familiarity with the device. An evaluation further revealed that CHEs who used the cup for themselves sold significantly more of them to women in the community (mean ± SD, 4.8 ± 7.2 cups sold per year by users vs 2.7 ± 4.1 sold by non-users, $p<0.001$). This suggests that a cup provider is better able to convince, guide and support new users based on her own personal experience.

Implications for policy and programmes

India is at a critical juncture in which traditional methods of menstrual protection are rapidly giving way to modern options, chiefly disposable sanitary pads. The countrywide volume of menstrual waste from large scale use of disposable sanitary pads is estimated to increase by 2036, to 343,363 metric tons per annum, about half of which is expected to be non-biodegradable. Menstrual cups offer an effective, low-cost option that can improve the duration and quality of menstrual protection, especially for those with long, outdoor working hours. A limited number of pilot experiences suggest that if women were to have easy access to menstrual cups and their initial use is mentored by an experienced user, there is high acceptance and satisfaction, especially among those who transition directly from locally made cloth pads to cups.

We recommend that central and state governments enable and support platforms for increasing awareness and access to menstrual cups among government personnel engaged in long or outdoor working hours, like policewomen, hospital staff, school teachers, auxiliary nurse-midwives and ICDS *(Anganwadi)* workers. Governments may also introduce free or subsidised menstrual cup access schemes (along with peer mentoring) for women living in marginalised communities, through agencies like health, women and child development, youth and sports. Menstrual cups should be positioned as an option for women, they in turn are expected to help address the needs of adolescent girls within their families. Bypassing women in the family to directly target adolescents could affect family support and mentoring for girls in managing their periods and in using cups successfully. Governments may also consider social marketing of menstrual cups. Lastly, India needs to develop or adapt standards for manufacture of menstrual cups, to cover quality, health, safety and performance aspects.

The menstrual cup allows a woman to become more familiar with her own body while keeping her periods private, hence its use could help reduce the impact of social and cultural restrictions, and the stigma that accompanies menses. Scaling up the use of menstrual cups is therefore expected to enhance women's agency in improving their own reproductive and general health and well being, while also protecting the environment.

Background

India's fourth and fifth National Family Health Surveys reported an increase in the use of modern menstrual hygiene products on part of 15 to 24 year old women, from 57.6% in 2015-16 to 77.3% in 2019-21 (figure 1).[1] This included a sharp rise in the use of sanitary pads from 41.8% to 64.4%, decline in the use of cloth, tampons and locally made pads, and insignificant use of menstrual cups. Even among rural women, the use of sanitary pads rose from 33.6% to 58.9%.

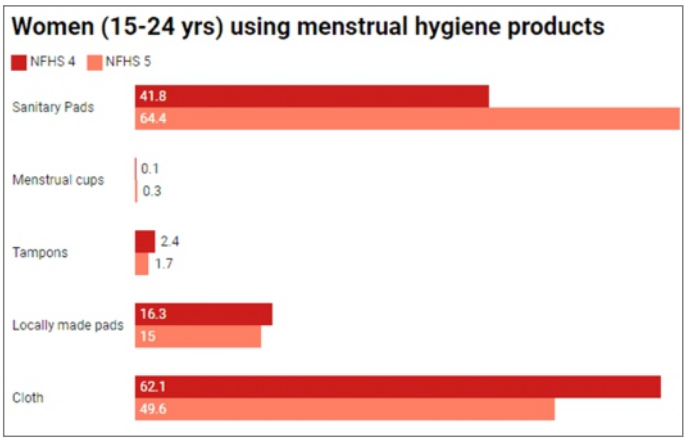

Figure 1 : Use of menstrual hygiene products by women (15-24 year) in India

Multiple factors contributed to the increase in use of sanitary pads, including greater market penetration, aspirational brand marketing and government initiatives to encourage use through free or subsidised distribution.[2] The availability of sanitary pads across a range of sizes, packs and prices also helped to drive rapid growth. In addition, mainstream and social media narratives focused on the adoption of sanitary pads, with one film,[3] and several celebrities promoting them.[4]

In 2011, Ministry of Health and Family Welfare, Government of India, launched a Scheme for Promotion of Menstrual Hygiene to increase awareness and provide sanitary pads at a subsidised rate of Rs 6 per pack of 6 napkins to adolescent girls (10-19 years) in rural India.[5] In 2014, the same Ministry launched Rashtriya Kishor Swasthya Karyakram (RKSK)[6] or National Adolescents' Health Programme, which included provision of free sanitary pads to adolescent girls. From a menstrual hygiene lens, the focus of this initiative was on provision of disposable sanitary napkins or clean cloth through school-based and out-of-school channels, counselling and referral for menstrual disorders. Communication materials focused on disposable sanitary pads as the sole menstrual hygiene option.[7] In 2015, the Ministry of Drinking Water and Sanitation issued Menstrual Hygiene Management National Guidelines[8] that recommended ensuring availability of sanitary pads in schools, separate toilets for girls, access to clean and adequate water supply and soap as well as facilities for disposal. Tampons and menstrual cups were excluded from the list of menstrual products in the guideline, on grounds that they were 'not commonly available or used in India'. In 2019, the central government introduced *Suvidha* oxo-biodegradable sanitary napkins through fair-price drug stores, at a nominal price of Re. 1 per pad.[9] Government of Rajasthan in 2021 launched the *Udaan* scheme[10] for free distribution of sanitary pads to adolescent girls and women through ICDS *Anganwadi* centres in the state. A review of state initiatives across Sikkim,[11] Himachal Pradesh,[12] Gujarat,[13] Jharkhand,[14] Orissa,[15] Maharashtra,[16] Assam,[17] and Tamil Nadu[18] confirm that menstrual protection translates into large scale introduction of disposable sanitary pads. While international UN guidance materials do include options like tampons and menstrual cups,[19] training and communication materials on menstrual hygiene initiatives in India have focussed only on sanitary pads.[20, 21] In effect, scaling up menstrual hygiene interventions in the country has meant scaling up the distribution and use of disposable sanitary pads.

Menstrual Cups: the lesser known alternative

Unlike sanitary pads and tampons which absorb menstrual blood (and hence are called absorbents), menstrual cups collect blood which has to be emptied before reuse. A menstrual cup is a flexible, bell-shaped device made of inert medical-grade silicone that does not alter the vaginal microbiome or pH, and hence does not increase chances of infection or cause allergy.[22] It is placed in the vagina by the woman herself, where it fits firmly and collects blood, filling up over 8-12 hours (earlier if periods are heavy). The cup can be washed with mild soap before reinsertion (silicone is water repellent and hence cleans easily). The cup can be reused for each cycle, for 5 to 10 years, making it sustainable and environment friendly as compared to disposable options. The Lancet published a systematic review in 2019,[23] that found menstrual cups to be an effective menstrual hygiene management option. The review reported that menstrual cups tend to be preferred over cloth pads, sanitary pads or tampons by many girls and women because of their ease of cleaning, lower environmental impact, improved physical mobility, reduced frequency of staining and reusability.

Menstrual cups have been available since the 1930s, but have had limited social acceptance as compared to sanitary pads. In India, they are currently favoured by a fringe group of well-educated, young, urban women who have ready access to online products – they can choose from some 30 online brands of menstrual cups priced from Rs 150 to Rs 1000 (table 1).

Pee Safe	Everteen	Naari yaari	Silky cup	SochGreen
Sirona	i Activ	KUQ	Asan cup	True cup
Safe Cup	Sanfe	Lemme Be Ze	My EverCup	Gynocup
Carmesi	The Woman's Company	Avni cup	Wow cup	Femisafe
Namyaa	Gaaia	Plush	Evereve	Bombae
Boondh	Rustic art	Stonesoup	Varni	Joyesta

Table 1: Online menstrual cup brands available in India

The product is sourced from within India or from China, Australia, USA or Europe.[2, 23] Recently, public sector Hindustan Latex Limited has launched two brands of menstrual cups.[24, 25] There have been few efforts in the country to introduce menstrual cups at the community level. In one panchayat of Ernakulam district in Kerala, about 5000 cups were distributed to women for free, to relieve the financial and environmental burden imposed by disposable pads. An evaluation of cup usage in Kerala found that after receiving preliminary training on how to use the device, 40.6% of free cup recipients started using it whereas only 20% used it without training.[26] Similarly in two districts of Karnataka, the state government introduced free menstrual cups for adolescent girls aged 16 to 18 years.[27] Small studies from Gujarat and Karnataka show that users preferred the cup for ease of mobility, less odour, ease of insertion and removal.[28,29]

The environmental impact of menstrual hygiene products

A disposable sanitary pad comprises of four layers - a permeable top layer, transfer layer, absorbent core and back sheet, apart from adhesives and paper-release. The average sanitary napkin comprises

48% fluff pulp, 36% polyethylene and polypropylene, 7% adhesives, 6% super-absorbent polymers (SAPs) and 3% release paper out of which only fluff pulp and paper are biodegradable while the remaining 49% is is non-biodegradable.[30, 31] The average weight of sanitary napkins commonly available in India, is 8 gm. Oxo-biodegradable sanitary pads have been intoduced in India. Certain additives are added to such pads, which on exposure to the sun's UV rays undergo inorganic oxidative degradation into smaller plastic polymers including microplastics, which remain in the environment until they biodegrade over many years.[32] Hence their environmental safety can be questioned. A single tampon weighs 2 gm, contains 90% viscose which is biodegradable while the remaining 10% is non-biodegradable.[33, 34] Tampons are not popular in India largely due to their high cost – they are thrice as expensive as disposable sanitary pads. The average silicone menstrual cup weighs 10 gm, all of which is non-biodegradable. However, unlike the non-biodegradable component of pads and tampons which break down into microplastics that can contaminate water bodies, silicone maintains its integrity and does not break into microplastics.[33] It also can be recycled. Hence silicone has lower environmental impact than a similar weight of other polymers.

Based on some standard assumptions regarding women's rate of use of either of three modern menstrual hygiene products - conventional disposable sanitary pads, conventional tampons and menstrual cups, we have calculated the total waste and non-biodegradable waste fraction generated by a single user through her lifetime. We have assumed 12 menstrual cycles per year and 30 years of menses after excluding periods of amenorrhoea due to pregnancy and other causes, and have accurately weighed sample product options available in the Indian market to arrive at mean weight. We have consulted references to calculate the proportion of each product (excluding packaging) that is non-biodegradable. The lifetime waste generated through use of each option has been depicted in table 2, below.

Product	Unit Weight	Average use duration	Estimated Product requirement per year	Lifetime total waste per user (kg) (assuming 12 cycles per year and 30 years of menses)	Lifetime non biodegradable waste per woman (kg)
Conventional disposable sanitary pads	8 gm	One time use	10 per cycle, 120 per year	8 gm x 10 per cycle x 12 cycles/year x 30 years = 28.8 kg	14.1 kg
Conventional disposable tampons	2 gm	One time use	10 per cycle, 120 per year	2 gm x 10 per cycle x 12 cycles/year x 30 menstruating years = 7.2 kg	0.72 kg
Silicone menstrual cups	10 gm	Reusable for 5 years	1 unit for 5 years	10 gm x 5 years* 6 cups = 0.06 kg	0.06 kg

Table 2: Total and non-biodegradable lifetime waste generated per user through use of menstrual hygiene products

The calculation reveals that use of tampons generates 25% of total and 4.8% of non biodegradable lifetime waste as compared to conventional disposable pads, while use of menstrual cups generates 0.2% of total and 0.4% of non-biodegradable lifetime waste as compared to conventional disposable sanitary pads. In effect, using menstrual cups instead of disposable pads can lead to over 99% reduction in non-biodegradable menstrual waste. While packaging material does add to the waste burden, it is not expected to substantially alter the above proportions. The impact of washing has not been factored into the above calculation.

Organic sanitary pads are considered to have lower environmental impact as compared to factory produced conventional pads. German researchers conducted a comparison of the environmental impact of conventional and organic sanitary pads, conventional and organic tampons, and silicone menstrual cups using a comprehensive life-cycle analysis that included the sourcing of raw materials, transport (of raw materials, intermediate and finished products), manufacture, packaging, use and disposal – this was based on the manufacturing and distribution context of Germany and Europe. The analysis revealed that conventional pads and menstrual cups respectively had the highest and lowest adverse environmental impact as compared to other options.[33] Organic sanitary pads require larger quantities of cotton for manufacture, and this has high environmental cost. Menstrual cups were found to have lower environmental impact than even biodegradable disposable sanitary pads and all kinds of tampons.

In part because of the stigma surrounding menstruation, the disposal of menstrual waste has received little attention at the community level. Default disposal practices range from throwing used pads along with general garbage, burning, burying or flushing them down toilets. While burning, the plastic component of disposable sanitary pads releases dioxins and furans that are highly toxic and carcinogenic. The Solid Waste Management (SWM) Rules (2016)[35] of India's Environment Protection Act, 1986, recommend segregation of waste at source into various categories and list disposal methods for each. While the rules mention management of used sanitary pads, there is no specific mention of collection and disposal of other menstrual waste such as tampons or menstrual cups. For treating and disposing menstrual waste, options such as low-cost, locally made incinerators, electric incinerators, deep burial, composting and pit burning are suggested. The rules elucidate responsibilities of authorities and manufacturers for proper disposal. In India, only two cities, Pune and Bengaluru, are known to segregate menstrual waste during routine garbage collection.[36] Without a system of SWM in place in most other parts of the country, sanitary waste is dumped in landfills or other areas. A 2015 systematic review of menstrual hygiene management among adolescent girls in India[37] showed that inappropriate disposal is common – it includes throwing pads, burning or flushing them down toilets. While a few cities have arrangements for disposal of solid waste, the issue of menstrual waste in rural areas remains unaddressed. The increasing use of disposable sanitary pads is therefore expected to magnify the problem of inappropriately disposed menstrual waste.

Introduction of menstrual cups in rural-tribal Rajasthan

Action Research & Training for Health (ARTH) Society is a non-profit organisation that utilises research and training, and tests facility and community based interventions to improve sexual and reproductive health outcomes in India. ARTH provides subsidised reproductive health care services including reversible contraceptives and menstrual hygiene products through health facilities and a network of 630 women community health entrepreneurs that serves a rural population of 550,000 in a rural-tribal area of southern Rajasthan. The region is marked by low educational, economic and health indicators.

We first explored how young rural and tribal community women managed their periods, by conducting a formative inquiry among 61 women in 2019. We learned that the majority used either discarded cloth pieces or locally purchased thick, maroon coloured cloth (*laal kapda*) as locally made, reusable pads. They reported frequent leakage and staining from poor absorbency, sticky discomfort (especially during summer) and hesitated to travel to another town or market during a period. One of them expressed her difficulty wearing thick layers of cloth saying '*aado-tedo chalno pade*' (have to walk in an

awkward manner). Women spoke about embarrassing situations while farming during the monsoon season, when sudden rains would soak their clothes and reveal that they were menstruating. The few sanitary pad users reported difficulty in disposing off used pads – neighbours would notice when they walked a distance from their homes carrying a polythene bag.

We scanned the market, sourced a supply of menstrual cups, some staff members tried them out and gave positive feedback. We launched menstrual cups on World Population Day, 11 July 2019. The product was branded as *RituCup* (in a reference to both *RituKaal* or menstrual period in Sanskrit, as well as *Ritu* or season in Hindi, because this is meant to be an option for all-season use). One cup in either of three sizes (small, medium or large) was provided within a cotton bag along with a simple Hindi-language instruction leaflet. Women Community Health Entrepreneurs (CHEs) promoted and sold the product – they had been trained to educate and support cup users, and were supplied with display samples and cups for onward sale. They already were selling nominally priced sanitary pads. These CHEs retailed menstrual cups for Rs. 150 (~$1.9) each and earned a margin in the process. They helped purchasers choose the right size and were advised to contact each client during the first few months to confirm that she was able to use it conveniently.

ARTH additionally offered women a local-language, toll-free telephone helpline, and used printed materials, videos, wall hoardings, and a village communication campaign to promote the cup. We took care to promote the menstrual cup as a modern option for menstrual hygiene management without running down current practices – women, including CHEs themselves, were free to rely on any other option, including locally made or disposable pads if they wished.

Figure 2: RituCup with storage bag and instruction leaflet

Key communication messages based on the formative inquiry and user feedback, were field -tested and conveyed to the community through various channels. They included the following:

- The menstrual cup is a modern menstrual protection device that reliably works in all seasons, women can carry out any kind of work and travel freely while on their periods
- The cup is highly effective – there is no leakage or staining during periods, hence no one else comes to know that the women is on her period – all days of the month feel the same
- The menstrual cup can be used for up to 12 hours at a stretch – this is especially useful for working women like teachers, farmers, policewomen and domestic workers
- The menstrual cup is inexpensive and can be used for up to 10 years
- Use of the menstrual cup helps to preserve the environment

We developed a short video film (3 minutes) in Hindi, that included instructions on cup use. A web search revealed more than 50 public videos on how to use a menstrual cup; they included some in Hindi, Marathi, Telugu, Bengali and Gujarati languages.

Figure 3: Menstrual cup poster and logo

Use and acceptability of menstrual cups among women in southern Rajasthan

Over about three and half years, the menstrual cup gained popularity with 5,695 cups having been purchased by women in Udaipur and Rajasmand districts of the state till 31 March 2023 (figure 4).

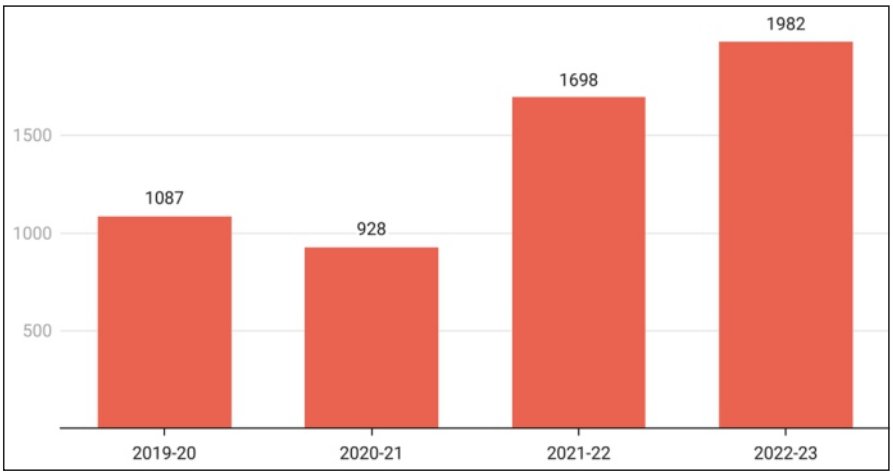

Figure 4: Menstrual cups purchased by women in southern Rajasthan

Among the attributes preferred by women in the community, a sense of comfort while carrying out household and outdoor work ranked high. Women said that when they used a menstrual cup, no one could detect that they were on their periods, and it also helped them deal with heavy flow. Others noted that the menstrual cup ultimately turned out to be less expensive because it needed one time purchase, unlike pads.

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'It was such a problem throwing pads. People would see. I would feel embarrassed going out to throw them. Now that I use the cup, nobody knows when I'm on my period.' (27 year old, illiterate)

'I usually have very heavy flow during periods, so (I) needed many pads, had to change them at least 4 to 5 times a day while worrying about stains all the time. I don't have worry any more with the cup'. (30 year old, primary school educated)

'I can do my daily chores and go anywhere without fear of staining...' (26 year old from tribal community, primary school educated)

'The cup is better than cloth. I don't have to worry about washing or drying it. I no longer fear staining during periods – I can even wear new clothes. When I was using cloth pads, I had to sleep in one position for fear of staining, but with the cup, I don't have to worry.' (34 year old, secondary school educated)

'I was afraid to use the cup for the first time. I thought it might slip out so I used a pad with it. Next day there were no stains on the pad, so I stopped using the pad with the cup. Now I don't fear staining – the cup is better than the pad. I would wake up early to go out and throw used pads, now I don't have to worry about that.' (28 year old, illiterate)

'Using cloth pads, I used to get a rash on my inner thighs. Washing the cloth was difficult. But with the cup, I don't get any rash'. (30 year old, primary school educated)

'My fear was, what if the cup gets stuck inside my body and won't come out? I contacted the Taruni sakhi (CHE), and she showed me a video on how to insert and remove a menstrual cup. After watching it, I was able to insert and remove it easily. Now I have no issues with the cup'. (20 year old, secondary school educated)

"

To gain insight into the acceptability of menstrual cups, we gathered feedback from 60 women. From each of three selected blocks, we listed 8-10 villages with the highest purchase of menstrual cups by women. A female evaluator visited each village, contacted the local CHEs and asked her to recall names of 2-3 women who had purchased a cup 3-4 months before. She then contacted such women in privacy, confirmed that they had begun using the cup they had purchased, gifted them an additional menstrual cup and took consent for gathering feedback on their experience after another three months. Four months later, we were able to meet 58 of 60 women, from whom we took feedback by asking them to agree or disagree with 8 statements, using a 5-point pictorial Likert scale (figure 5). We learned that women gave a high rating to the menstrual cup for ease of insertion, use, removal, cleaning and storage, with an aggregate rating of 4 out of 5 points. While a generalised conclusion would certainly require a larger sample of users, this finding as well as our qualitative observations do point towards growing acceptability of the menstrual cup among women in the area.

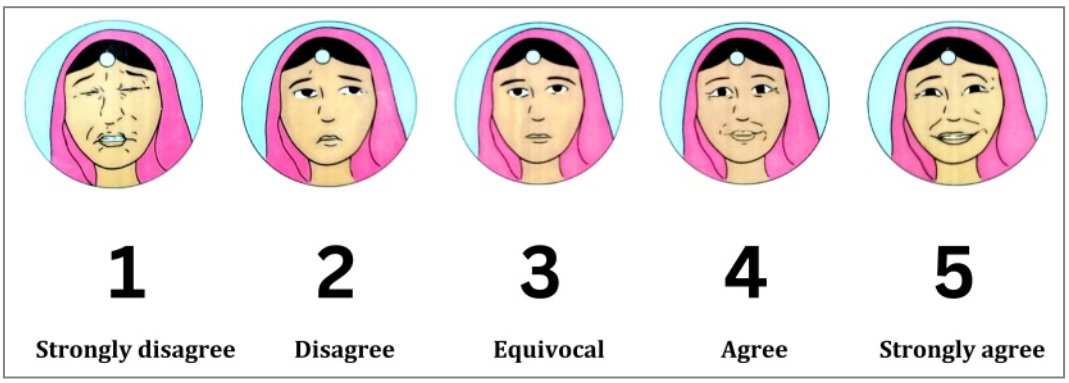

Figure 5 : Five point pictorial Likert scale

Sr. No.	Affirmative statements	Rating
1	It was convenient to insert the cup	3.9
2	The cup opened easily inside	3.7
3	The cup was effective in preventing spotting during periods	3.7
4	It was comfortable to carry out daily chores with the cup	4.0
5	It was comfortable to pass urine wearing the cup	4.2
6	It was convenient to remove the cup	3.9
7	It was convenient to reinsert the cup	3.9
8	It was easy and convenient to wash the cup	4.7
	Aggregate Rating	4
	Maximum Rating	5

Table 3: Rating of menstrual cup related processes over the past 3 months, given by women who had purchased a menstrual cup (n = 58 out of 60 women)

Three years after introducing the menstrual cup we reviewed monitoring reports of field staff who were assigned to meet women that had purchased the cup, to guide and support them as needed. They had visited 784 such women who had periods over the last three months[i], during the period January 2022 to March 2023. We found that 84.4% of purchasers had used the purchased cup – most had used it for all three months while a minority had used it for 1-2 cycles out of three. Even after getting information and purchasing a menstrual cup, 15.5% had not used it till the point when our staff met them (figure 6). We are learning how to deal with purchasers' issues in using menstrual cups.

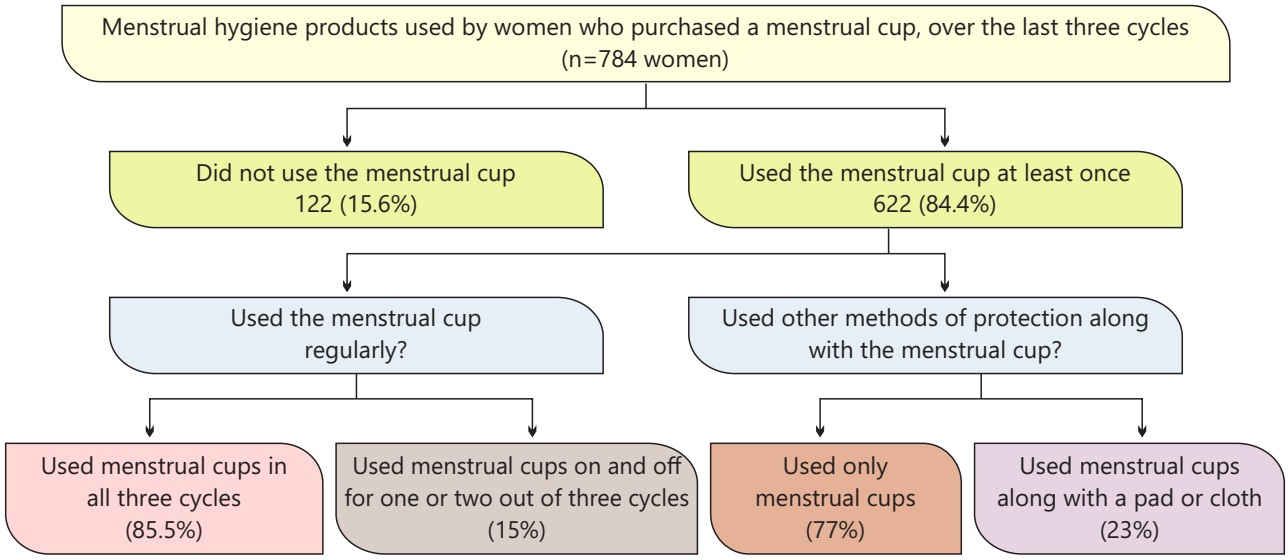

Figure 6 : Menstrual hygiene products used by women who had purchased a menstrual cup, over the last three cycles

We further analysed use of menstrual hygiene products by the above 784 women, for the 2352 periods (three each) that they had gone through. We learned that the large majority (78%) of periods had been protected by menstrual cups – for most periods, the cup had been used without any add-on methods (figure 7). This suggests that once women acquire a menstrual cup and receive guidance over the subsequent months, most of them commence using it, eventually relying on it as the sole menstrual hygiene option.

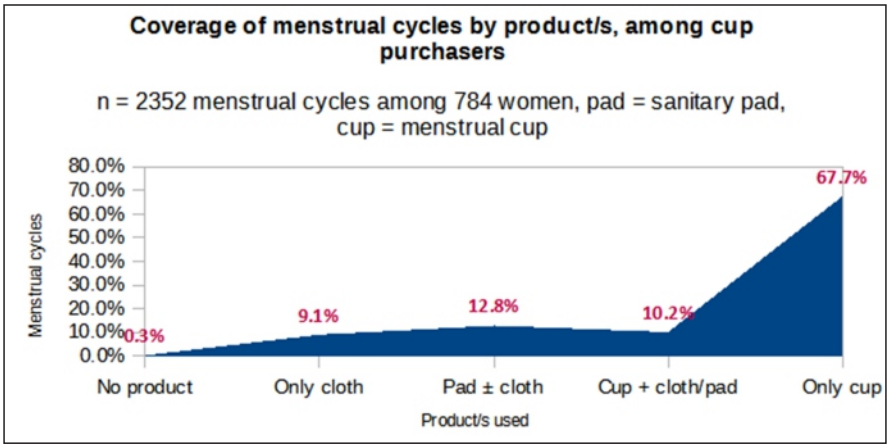

Figure 7: Coverage of menstrual cycles by product/s, among menstrual cup purchasers

i This number excludes cup purchasers who had amenorrhea because of pregnancy or other causes

Use of menstrual cups by adolescents

Nestled between hills and located close to a lake is village Mandarda in Udaipur district of Rajasthan. Mohini (name changed), 35, lives there with her husband, parents-in-law and two children. On a typical day, she works the farm, cuts grass or goes to a MGNREGA work-site. She recalled learning about *RituCup* from the local Taruni Sakhi, and how she initially hesitated to get one -- 'What if something happens?' After some months, one day she decided to buy a *RituCup* because pads were causing her skin rash. At first she found the cup rather odd to use, but with practice got used to it. She now likes the cup so much that she has bought one for her 14 year old daughter as well. Mohini says, 'Periods are no longer a problem – no rash, no stains. What more do I need?'

Among the 784 women who had purchased the cup and were contacted by field staff, 109 were adolescents. Most of these girls had been advised by an older woman in their own family, commonly their mother, to try out the cup – they had bought the small or medium size. We found that 83.5% had used the cup, while 16.4% continued to rely on pads or cloth.

Some girls had apprehensions about use, while others liked the cup because it provided them with easy access each month without requiring repeated purchase.

> *'I am scared to use the cup. How do I insert such a big thing?...What if something happens?'* (15 year old, unmarried, completed primary schooling)
>
> *'I would have to buy pads each month. In case I did not have them in stock and got my period, it became a problem. The nearest store is 4 km away. Now with RituCup, I don't have a problem. Whenever I get my period, I instantly use the cup.'* (18 year old, unmarried, completed primary schooling)

Women's preferences for storing the menstrual cup

We separately explored women's preferences for storing the cup between periods. Most preferred to keep it in a cloth bag that could be tucked away discreetly between layers of clothing. The cloth bag also allowed the cup to remain dry between periods.

> *'For me, a cloth bag is better. I can just hide it under a pile of clothes so no one can see it.'* (19 year old, primary school educated)

A box or rigid container by contrast tended to get noticed, leading to curious questions from children or others in the family.

> *'If children see the container, they will want to open it. But a cloth bag requires less space, so I can hide it easily.'* (27 years old, married, secondary school educated)

We used this feedback to continue providing cups in a sturdy cotton bag with purse-string clasp.

Use of menstrual cups by providers - community health entrepreneurs (CHEs)

About 2 years after launching menstrual cups, we confidentially asked our Community Health Entrepreneurs (CHEs) to recall what they themselves had used for their last 3 periods. These CHEs had earlier been trained and provided with cups for onward sale. They were selling menstrual cups in the community and were providing their customers guidance and support in the initial months of use. We learned that 55% were already using the cup for themselves (figure 8). Considering the prevailing market share of other menstrual hygiene products, this points to the potential popularity of the menstrual cup among women in similar rural-tribal areas, if they were to have easy access to and awareness of the option. Nevertheless, 9% CHEs additionally used pads or cloth along with cup in order to be sure of not staining their clothes.

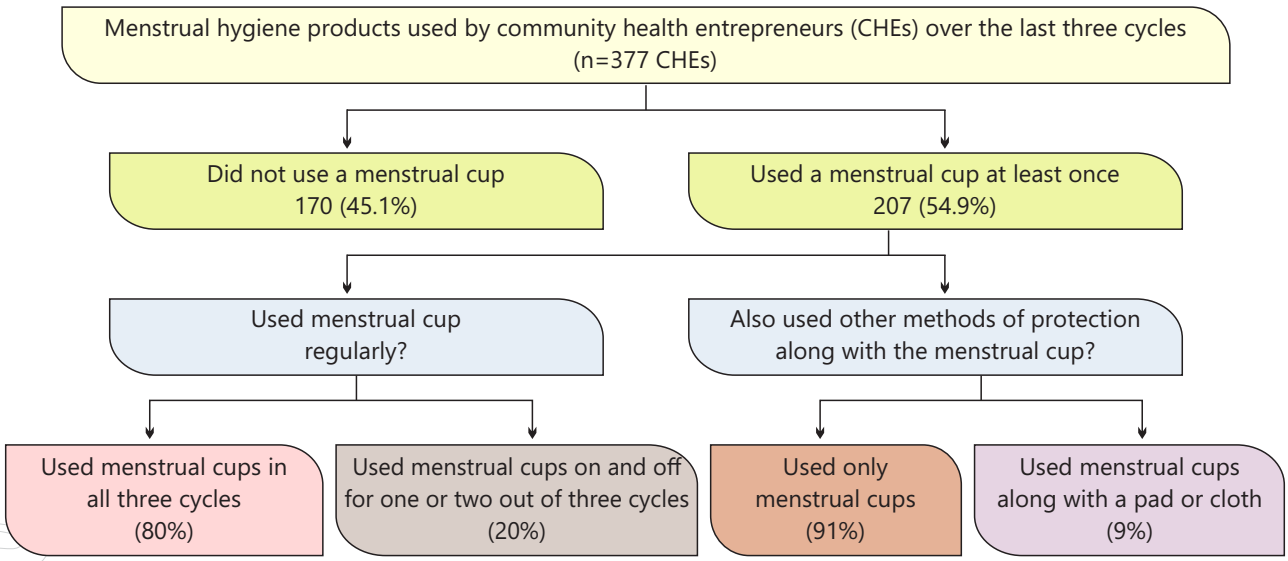

Figure 8: Menstrual hygiene products used by community health entrepreneurs (CHEs) over the last three cycles

We further analysed menstrual cup sales by CHEs by their own use of the method, and found that those who used the cup themselves, sold significantly more of them to women in the community (mean ± SD, 4.8 ± 7.2 cups sold per year by users vs 2.7 ± 4.1 sold by non-users, $p<0.001$). Users sold 78% more menstrual cups than non-users. This indicates that personal use-experience enables a provider to better guide and support new users.

Implications for policy and programmes

India is at a critical juncture in which traditional methods of menstrual protection are rapidly giving way to modern options, chiefly disposable sanitary pads. The countrywide volume of menstrual waste from large scale use of conventional sanitary pads is likely to increase by 2036 to 343,363 metric tons per annum, about half of which is expected to be non-biodegradable (See annexure 1 for calculations). Given the absence of solid waste management systems across large parts of the country, this is expected to have an adverse environmental impact. Menstrual cups offer an effective, low-cost option that can improve the duration and quality of menstrual protection, especially for those with long, outdoor working hours. They have proven lower environmental impact as compared to disposable pads as well as tampons. A limited number of pilot experiences suggest that if women were to have easy access to menstrual cups and their initial use is mentored by an experienced user, there is high acceptance and satisfaction, especially among those who transition directly from locally made cloth pads to cups.

Globally, there are no agreed standards for manufacture of menstrual cups. The classification, standards and procedures for approval of menstrual cups vary by country. For example, Australia categorises menstrual cups as therapeutic goods, hence requires compliance with therapeutic goods standards.[38] In the USA, menstrual cup are included under class II medical devices for which manufacturers must submit a 510(k) pre-market notification for clearance.[39] Uganda has recently developed draft standards which include cup dimensions, capacity, biocompatibility, sterilisation, packing and labelling.[40] In India the menstrual cup comes under the category of medical device Class II. As there are no specific standards, India relies on UNFPA recommended specifications.[41] There is need for national standards for menstrual cup manufacture, to cover quality, health, safety and performance dimensions.

The current lack of popularity of menstrual cups is related to a combination of low awareness, non-availability, reservations among women about inserting a device intra-vaginally, and the need for peer mentoring during initial months of use. Other than a general waiver of Goods & Services Tax for menstrual hygiene products and the initiation of manufacture by a public sector company, menstrual cups also have received little policy attention or support thus far. From the standpoint of women's health, social and economic empowerment, as well as for preserving the environment, we therefore recommend that central and state governments institute policy measures and support interventions to enable enhanced use. An indicative list of such measures is given below:

- Enable and support platforms for increasing awareness and access to menstrual cups among government employees or workers engaged in long or outdoor working hours, like policewomen, hospital staff, school teachers, auxiliary nurse-midwives and ICDS *(Anganwadi)* workers.
- Introduce free or subsidised menstrual cup access schemes (along with peer mentoring) for women in marginalised communities, through government agencies like health, women and child development, youth and sports, etc. Explore the provision of telephonic advice or mentoring through call centres
- Position menstrual cups as an option for women (and other menstruators) - rely on women to help address the needs of adolescent girls in their families. Bypassing women in the family to directly target adolescents could reduce family support for girls in managing their periods and in using cups successfully.

- Introduce and support social marketing of menstrual cups
- Establish quality norms for manufacture of menstrual cups in India. Cups are currently being procured largely from within India and from China, but are not assessed to BIS or equivalent standards.

At an individual level, the use of menstrual cups requires a woman to become more familiar with her own body and to learn more about maintaining her health and well being. Menstrual cups enable women to keep their periods private, hence they could help reduce the impact of social and religious restrictions and taboos, and the stigma that accompanies menses. Scaling up the use of menstrual cups is therefore expected to enhance women's agency in improving their own reproductive and general health, while also protecting the environment .

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Annexure

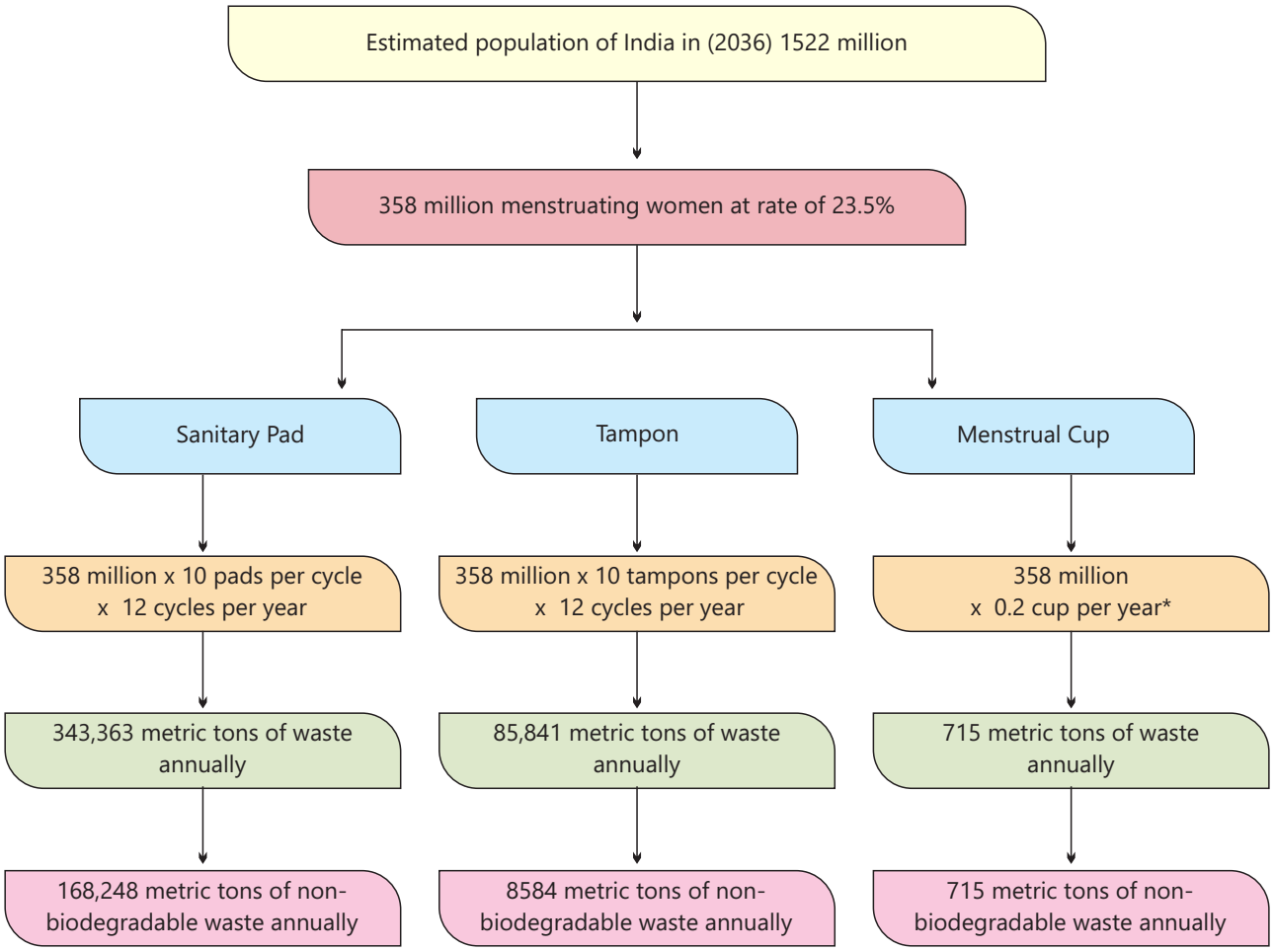

Figure 9: Estimates of waste generated by use of menstrual hygiene products in India over one year, projected to 2036

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