

DESIGN RESEARCH IN PROFESSIONAL PRACTICE

Where users are designers and researchers: women collaborate in menstrual product design.

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ABSTRACT

People from urban slum settlements and rural communities have keen insights and are valuable partners in research and development. They recognize that their contribution is important and actively participate. This was well illustrated in a collaborative design and research study conducted in South Rajasthan that was based on two menstrual products. Twenty one women participated, 6 in design development and 15 in a product cross over trial spread over one year. During this period they designed, prototyped, used and compared products. They indicated preferences and recorded their experiences of the two menstrual management products, the Time Piece, available in the local markets in Southern Rajasthan and the new menstrual product, Uger Pads. The collaboration resulted in a product designed for women by the women themselves that was tested and validated by users themselves. During the research process, users diligently recorded how much soap and water was used at each cycle, they kept track of how long the products took to dry, they kept notes of where they hung and stored their products. We were able to see and record how products fared after each maintenance cycle when the collaborators brought in used items for inspection. They allowed us to photograph their homes, places where they wash and hang and also take pictures of used menstrual products after each cycle. The contribution of collaborators from communities must be honored and acknowledged. They had placed trust us, in spite of being from a social context where the subject of menstruation is still shrouded in shame and secrecy. Collaborators had broken their own silences by participating in design and research processes.

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PREAMBLE

Women need healthy, environmentally friendly and socially acceptable menstrual product options. The design development and research work done with *Uger* reusable sanitary napkins reported in this paper has been conducted in a collaborative way to include users themselves, who are the best suited to validate what they have created.

1. BACKGROUND

1.1 RURAL WOMEN AND REPRODUCTIVE HEALTH

India has poor indicators for reproductive health. A UNFPA^a fact sheet reports that 63,000 women die due from causes related to childbirth¹. Other studies point to incidences of reproductive tract infections owing to poor menstrual hygiene². This scenario is being addressed in different ways. There have been many initiatives rooted in the NRHM^b programme and other NGOs^c that have been specially working for adolescent and women's health issues. Within the area women's health, menstruation is crucial, as it forms the foundation of life itself.

1.2 MENSTRUATION

Rural or urban women, rich or poor women, Asian, European or African women, menstruation is a periodic biological occurrence that will be present for all. Menstruation can be understood simply in the following way. "All adolescent girls and women experience bleeding every month. This usually lasts 4 to 6 days. This occurrence of bleeding month after month, is menstrual cycle or period"³. This phenomenon unique as it is strongly associated with attitudes, superstitions and customs of communities. For example women are not allowed to enter the kitchen or religious spaces as they are considered impure during these times⁴. These negative beliefs have been carried forward through the ages and play a detrimental role in women's health⁵. Blood during these times has to be contained, absorbed or managed, economic and social circumstances play a role is how this will be done. Women use a variety of products to manage menstruation. These can be categorised in many ways, by raw material, by shape or form, by size, and others.

1.2 MENSTRUATION MANAGEMENT PRODUCTS

There are two overarching management categories, reusable products and disposable products. Reusable products can be used multiple times. In this category, world over, cloth emerges as the most common example. Women harvest cloth from old garments and other textiles available at home. This is reused until end of life of the fabric. Shaped cloth pads with buttons have been in the market for some years now. The reusable cloth pads are available in many counties, produced by many different companies and small home businesses, such as Luna Pads, Glad Rags, New Moon pads, Tree Huggers and others. In India, cloth menstrual pads are produced and sold by an NGO, Ecofemme, located at Auroville, Pondicherry⁶. Other reusable options are the menstrual cup which has been recently manufactured in India under the brand name of She Cup⁷.

Of the many varieties of disposable materials used during menstruation, the use of newspapers, toilet paper, leaves, straw and sand are commonly reported⁸. However, the "one time use and throw" sanitary pads or napkins made up of polymer components and gel, has gained increasing popularity. Multinational brands available in India are Whisper, Stayfree, Sofy, Kotex and She. There are cottage industries producing disposable sanitary napkins, managed by Self Help Women's Groups across many states in India. For example, SWRC – Social Work and Research Centre at Tilonia in Rajasthan make pads under the brand name of *Saathan*, *Sakhi* pads are made by made by Jai Mahalaxmi Swa Sahayata Samuh at Chattisgarh. MITU Foundation an NGO in Karnataka, makes disposable pads under the brand name Ritumitra at village Hatti, Tumkur District.

2. MENSTRUAL MANAGEMENT PRACTICES SPECIFIC TO SOUTHERN RAJASTHAN

From focused group discussions, observations and surveys^d we found that that women and girls commonly use three methods to manage menstruation:

1. Square or rectangular pieces of cloth are harvested from old garments such as shirts, petticoats and bed sheets (Figure 1). This is folded and placed in the underwear. This is then washed and hung out in dark corners, away from the sight of men as there is a belief that men turn blind if they see a used menstrual cloth. This practice results in women wearing improperly maintained cloth, causing fungal and other reproductive related infections. The cloth can actually be an appropriate product if it is hung out in the sun in order to sterilize and completely dry out. The cloth is discarded after it becomes stiff or if it tears. Depending on strength of cloth that is harvested, it can last 2 to 8 cycles.
2. A locally available fabric called *Time Piece* (TP) (Figure 2), is purchased from the market. This product is also worn in the same way as cloth, then washed and reused for about 4 cycles, after which it becomes unfit for use and then discarded. There is preference for this product as it is available in dark colours and is convenient to hang out to dry as no stains are visible. The fabric is a poly acrylate material, which is not cool to the skin when worn. This is reported to cause rashes and itching and in extreme cases boils and abscess occur.
3. Some women access the branded disposable sanitary napkins or DSN (Figure 3) such as Whisper or She. This is pasted on to the underwear. Pads are single use products and are disposed each time. Locally this is referred to as "*Medical Wallah Kapda*" (cloth from medical store) as it was earlier available only at pharmaceutical shops unlike now where it is a regular grocery store item. The numbers of these women are small but steadily growing.

As with all other consumer items, there is aspiration, users keep changing menstrual products. Cloth harvested from home is perceived to be old fashioned and market bought items hold a higher status, often women move from cloth to TP to DSN^e.



Figure 1 Cloth from home



Figure 2 Time piece or TP



Figure 3 Disposable sanitary napkins

3. IMPACT OF PRODUCTS AND NEED FOR DESIGN AND RESEARCH

We had previously established that cloth is poorly managed leading to health problems. Further studies helped us to understand menstrual products more closely. We found there was a direct link between raw materials of the product and the impact the product causes on both environment and health. TP made of artificial material does not biodegrade. DSNs made of non woven polymers and other plastics and chemicals also do not biodegrade. Other researchers report that these kinds of raw materials in products either remain in a landfill for many years⁹ or disintegrate through photo degradation, turning plastic components into microscopic pellets entering waterways¹⁰. The debris from these materials is voluminous. For example if a women were to use DSNs alone she would throw away a minimum of 120 pads at the end of the year. If she were to use TP alone, she would be discarding 6 to 10 TPs at the end of the year¹¹. Further we interviewed 19 women who reported problems with disposable pads. They reported boils, severe itching, rashes and other discomfort

while using gel based napkins^f. It soon became clear that options are few and in this scenario there was a felt need for healthy, comfortable, economic and socially acceptable solutions. To design socially accepted solutions, an important strategy is to involve the community, the end users of the product.

4. METHOD

Two methods were employed, in collaboration with women.

1. Together with women from a slum settlement Ramnagar Basti on the outskirts of Udaipur city, Rajasthan, reusable cloth pads named *Uger* were developed and prototyped. This is described in section 5.
2. A cross over user trial was designed. Women around villages near Railmagra, Rajsamand district, Rajasthan participated. The trial was developed in a collaborative way. This is described in section 6.

5. WORKING ON UGER PADS – COLLABORATIVE DESIGN DEVELOPMENT

Six women were involved during the design development phases⁹ who worked closely along with the researcher and five international student interns over a period of 4 months. (Figures 1,2,3,4). The process began through discussions and meetings in order to first break silence on menstruation matters. This was followed by developing many samples.



Figure 1 Talking to women in the field



Figure 2 Working out patterns for napkins



Figure 3 Cutting out samples in fabric



Figure 4 Stitching samples

We consulted with *Ecofemme*, *Auroville*^{ch} as we began working and developed a crisp design brief.

- Cotton fabric was selected for the product. Cotton cloth is cool to skin and is a non irritant, so potentially we knew there may not be problems
- Cotton is biodegradable. It would not create voluminous menstrual debris after the final disposal or at the end of the materials life.
- The fabric was styled and stitched, making it trendy so it would not look like just any piece of cloth, shape and size was designed to make it comfortable for the user, wings and snaps were provided for fixing to the underwear, so the pad would not shift when moving and additionally absorb the side flow of discharges
- To manage different volumes of discharges throughout the cycle – adequate layers and separate styles were developed
- The colour of fabric that would touch the skin was kept white so a user could identify abnormal discharges as we worked through many different styles of pads.

Figures 5 shows the initial designs of the pads. These initial samples were worn by all in the collaborating design team. Over a four months period they refined, modified and tested sizes, thickness, placement of snaps (buttons) and other factors. Figure 6 shows used pads.



Figure 5 Developing different designs for the napkins



Figure 6 Samples of used napkins.

Two styles of pads were finalised. The pads were given a name - *Uger* reusable pad. The word *Uger* means a new beginning in *Mewadi*, the local language in South Rajasthan. The expectation was that this new product would be:

- superior to the existing reusable product
- more efficient in managing discharge
- a healthier and environmentally appropriate option than existing products

Basic structure and dimensions of the pad were finalised, see Figure no 7. The pad has 4 layers of cotton cloth as shown in Figure no 8. How to wear the pad is illustrated in figure 9.

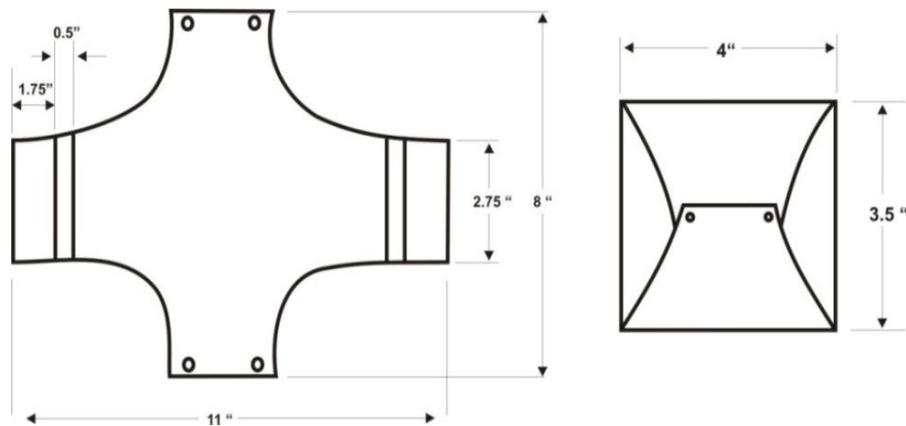


Figure no 7 Dimensions of pad



Figure 8 Layers in the pad

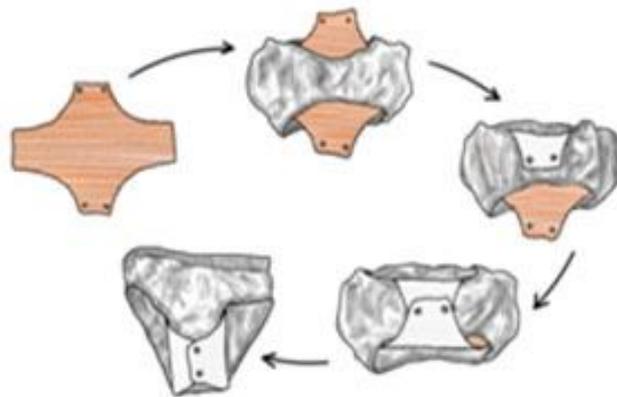


Figure 9 How to wear

Figure 10 shows a light pad, designed for light days of the menstrual cycle. The top surface touching the skin is white in colour, the bottom surface is multicoloured. Figure 11 shows a pad for heavy flow days. A towel is inserted in the loops.



Figure 10 Light pad



Figure 11 Insert pad for heavy flow

6. COLLABORATIVE RESEARCH THROUGH A PILOT CROSS OVER TRIAL

Once the design collaborators had finalised the prototype, the next step was seeking feedback from other potential users. *Uger* pads were given out randomly to 38 women willing to try out a new product. In this exploratory effort we were able to get more feedback on product function and some indicators for acceptability and adherence. When we reconnected with these 38 users 1 year after they were given *Uger* pads, we found that 10 users had completely switched to *Uger*, while 7 were using *Uger* in combination with their earlier products.

The next obvious step pointed to comparison of products. We wanted users to compare the new pad *Uger* against an existing product. We re-examined the three existing products in the study area, cloth, DSN and TP to decide what should be used for comparing with the new artefact. Since DSNs are not affordable for everyone in the study area, it was ruled out. Cloth that is harvested from used garments are non standardized products as they can be any size any shape, from any garment, with each piece of cloth different from the other, this was also ruled out. TP was seen as the most appropriate. It offered standardization in terms of colour, size and consistency of fabric. Hence a cross over trial method was designed, involving two products TP *and Uger*. Participants had to use one product for a specified length of time that is 4 menstrual cycles and then switch to the second product for the next 4 menstrual cycles. Users were divided into two groups, group 1 and Group 2. Users in Group 1 used product no 1 (TP) – here 3 TPs were provided. Users in group 2 used product 2 – *Uger* - here 2 insert pads, 4 towels and 1 light pad was provided. After 4 menstrual cycles, group 1 moved to *Uger* pads and group 2 moved to TP. The trial was spread over an 8

month period. 18 women initially joined the trial, however 3 abandoned the trial within 2 cycles - 1 user got pregnant, another got a job and had to relocate and the third just lost interest.

- The users were *anudeshaks* (educators), volunteers and women working with or associated with Jatan Sansthan, the NGO supporting the *Uger Pad* research work. We were testing a new product, we thus included women whom we could easily track who had continuing contact with the participating NGO, Jatan Sansthan.
- Users were in the age group of 16 years to 40 years.
- 2 users were previously using cloth. Others were using a combination of cloth and TP.
- Each user was provided a record file to keep notes and instructed on how to maintain it. The record file kept track of menstrual cycle dates, where and how the product was washed, how much soap was used and other factors.
- They were asked to only use the product they were given and no other - during their 4 cycles.
- They were specifically alerted that they could leave the collaborative trial if the product was uncomfortable and causing them any health problem.
- They attended meetings every month and brought their used product for photographing.

Table no 1 shows feedback from users in the trial.

User feedback	TP or Time Piece	Uger Pads
General design	Just placing fabric in underwear causes fabric to shift	Button system pad firmly in place, acceptable to all
Comfort	Chafing in inner thigh area, shifting of cloth	Minor chafing reported
Raw materials	Did not suit all users, caused allergy, rashes, itching, boils, swelling chafing	Suited all users, only chafing in inner thigh area reported
Frequency changing	Twice or thrice in a day, after four to five hours	
Washroom/bathroom facility for changing and washing product	1 user has latrine and bathroom facility 1 user has space that is covered for bathing, but no latrine Remaining 13 users bathe and wash menstrual product in the open at the <i>nyora</i> or barn, or cordon off a small space at home with a curtain and squat behind the curtain to wash.	
Time taken to wash	5 to 10 minutes, porous fabric, easy to wash	15 to 20 minutes, cotton cloth takes time to wash out stains
Method of washing	No brush can be used as it removes fibre from product, hand rubbing action is employed to remove blood and finally rinsed with water	Clothes brush required for scrubbing
Detergent / soap used	Soap cake: Brand Doctor cakes – soap is rubbed on menstrual product Tub: Chandraprakash - soaps are available in large tubs. Menstrual product rubbed on the surface of the soap in tub Detergent: Nirma, Delight – menstrual product is soaked in a bucket of water along with detergent	
Effort required	Not much effort required	Physical effort required
Water used	4 to 7 litres	8 to 10 litres
Detergent used	5 gms	10 gms
Where dried/hung out	On the clothes line, on terrace wall, away from sight of men , sometimes not in sun	
Drying time	40 minutes in hot 40 degrees sun, longer time as weather gets cooler, 1 hour under fan if raining	3 to 4 hours in 40 degrees sun light. 6 to 12 hours depending on how cool the weather is or if hung in shade, 48 hours when raining (hanging indoors)
Health problems	allergy, itching, discomfort, redness,	none

	swelling , skin abrasions	
Climate/Weather factors	very uncomfortable in summer- difficult to wear all the time, easier in winter	Comfortable all seasons
Acceptability	Drying openly was acceptable, as stains were not visible after washing	Drying openly causes discomfort as stains are visible

Table no 1: Feedback from users in trial.

The cross over trial began toward the end of December 2013. In group 1 of 8 users, only 4 were able to adhere to TP for the stipulated period of 4 cycles. The remaining 4 gave up after 1, 2 and 3 cycles. By the time 4 cycles were covered, women had health problems. Additionally it was end April when the warm weather had started and TP becomes harder to wear with increasing heat. At the point of cross over, the transition from TP to *Uger* was smooth. Additionally no one abandoned *Uger* pads in the next 4 cycles. In group 2, of 7 users, no one abandoned the trial for the stipulated 4 cycles. However there were many problems at the time of cross over. 1 user simply refused to accept TP. She previously had problems with it and was very reluctant to use it again. 1 user was happy to go back to TP as there was less effort to wash and easy to dry anywhere. The remaining 5 users stayed throughout with TP.

7. LIMITATIONS, WAY FORWARD AND CONCLUSIONS

At the end of the trail all users felt that *Uger* was superior to TP as it had freed some of them from the misery of TP use that was causing so many allergies. There was one major negative point that *Uger* being white in colour there was still hesitation about openly displaying a stained menstrual product. Hence socially *Uger* still needs to be fully accepted. Additionally there was double the physical effort required to clean out the white pads as opposed to dark coloured TP.

The cross over trail begun in December 2013 concluded in August 2014. Three months on, we reconnected with users to understand what menstrual product they were using now that they had tried both products. Meanwhile we had lost contact with 2 users. However, of the 13 users we met, 1 user has gone back to TP saying it was easier to wash and hang it anywhere. 12 users have confirmed that they are continuing to use *Uger* pads post the collaborative trial. We were encouraged by many factors to take up production of *Uger* pads :

- 50% of users in initial random sampling done by 38 women, had not rejected *Uger*.
- the design development collaborative trial users were continuing to use *Uger*.
- women in the collaborative cross over trial were continuing to use *Uger*.
- when we tracked longevity of *Uger* pads, we understood that 6 *Uger* pads can be used for 20 cycles after which it will need to be replaced with new ones. This makes a huge difference on environmental load as we had earlier understood that 120 pads non biodegradable materials are thrown over 12 cycles.
- Ecofemme also encouraged us to keep up the effort as they support reducing environmental load on the earth

Thus a production centre was opened at Ramnagar Basti by the same group of women who were the initial collaborative designers. The centre today two years later (from the point of design development) is lead by the designer-researcher with financial assistance from Jatan Sansthan. 5 women manage this unit. The unit still runs in a not for profit mode, however a supplementary income source has been generated for women from the slum settlement, who were not earning anything up until this time. Today, *Uger* pads have a presence at four online outlets' taking individual client orders for pads.

Dictionaries define collaboration as "working with others for a common purpose or benefit". We have taken collaboration toward a much deeper meaning in the context of menstruation, an area

that is still on shaky ground in India. Shrouded with taboos and non scientific beliefs, women have broken free and have understood the long term vision of why an alternate menstrual product must be developed, tested and mass produced. The next step now is taking this forward to larger communities to include, women, men, academic communities, health communities, organisations and others, as menstruation is not just a biological phenomenon, it has strong social connects. The research on the artefact needs to move into a second level. Future plans include well designed qualitative and quantitative experiments with larger samples of women which will give us statistics to establish preferences, acceptance and adoption of the new product.

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^a UNFPA - United Nations Populations Fund

^b NRHM - National Rural Health Mission: a government of India health initiative

^c Examples of NGOs - Chetna , Gujarat , Jatan Sansthan, Rajasthan, CINI, West Bengal

^d The researcher worked closely with Jatan Sansthan, an NGO working in Southern Rajasthan. The collaborating women were from - Ramnagar Basti, Udaipur City and villages in, Rajsamand District.

^e From previous studies conducted by the researcher as a part of her Ph.D work

^f From interviews conducted by the researcher as a part of Ph.D work

^g These women were part of a micro finance initiative of Jatan Sansthan an NGO. They had all earlier participated in a sewing training programme and were well versed in the use of sewing machines.

^h Ecofemme, at Auroville pioneered cloth pad production in 2012

ⁱ www.jatansansthan.org/areaofwork/safe-menstrual-health-uger/ , www.ugerpads.jimdo.com, www.iamgreen.in/apparel/women/pads.html, <http://www.craftsvilla.com/UGER>