

Menstrual Problems and PMS Symptoms

“It’s a girl thing”: Examining Challenges and Opportunities around Menstrual Health

Submitted by: Isha Mhatre

Department of User Experience, MITID

GUDC401- User Experience Design Methods

Guided by: Wricha Mishra

March 8, 2021

Table of Contents

ABSTRACT	5
INTRODUCTION	5
MENSTRUATION	5
MENSTRUAL PROBLEMS	5
WHY MENSTRUAL PROBLEMS?	5
OBJECTIVES.....	6
RESEARCH QUESTIONS	6
STAKEHOLDERS.....	6
METHODOLOGY	7
DESIGN PROCESS	7
DESIGN APPROACH	7
DESIGN BRIEF	7
METHODS USED.....	7
<i>Contextual inquiry</i>	7
<i>Stakeholder interviews</i>	8
<i>Affinity mapping</i>	8
<i>Flow modeling</i>	8
<i>Sequence modeling</i>	9
<i>Cultural modeling</i>	9
<i>Questionnaire survey</i>	10
<i>Competitive analysis</i>	10
<i>Competitive matrix</i>	10
<i>Empathy mapping</i>	11
<i>Fictional personas</i>	11
<i>Story boarding</i>	11
<i>Idea menu card</i>	11
<i>SWOT analysis</i>	12
<i>Kano model</i>	12
<i>Information architecture</i>	13
<i>Wire framing</i>	13
<i>Pretotyping</i>	13
<i>Value proposition canvas</i>	13
PROBLEM STATEMENT	14
RESULTS	15
OBSERVATIONS	15
AFFINITY MAPPING	16
FLOW MODEL	17
SEQUENCE MODEL.....	18
CULTURAL MODEL	19
RESPONSE STATISTICS	20

COMPETITORS MAP.....	21
<i>Primary analysis map.....</i>	21
<i>Secondary analysis map</i>	21
COMPETITORS MATRIX	22
<i>Problem matrix.....</i>	22
<i>Feature matrix.....</i>	22
EMPATHY MAPPING	23
FICTIONAL PERSONAS.....	27
STORY BOARD	29
REDEFINED PROBLEM STATEMENT.....	29
CONCEPTUALIZATION.....	30
IDEATION.....	30
MAIN CONCEPTS.....	31
<i>Concept1: TENS unit.....</i>	31
<i>Concept2: Vibration and Sanskrit alphabets</i>	33
<i>Concept3: Massage and heating belt</i>	35
<i>Concept4: Acupressure unit</i>	37
<i>Concept5: Application.....</i>	39
SWOT ANALYSIS	32,34,36,38,39
SELECTION OF FINAL CONCEPT	40
FINAL CONCEPT	42
<i>Concept brief.....</i>	42
<i>Kano model</i>	45
<i>Information architecture</i>	46
<i>Wire frames</i>	47
<i>Pretotype.....</i>	48
<i>Value proposition diagram.....</i>	48
CONCLUSION.....	49
INSIGHTS AND LEARNING.....	49
CONTRIBUTION.....	49
CONSTRAINTS.....	49
FUTURE SCOPE	49
REFERENCES	50,51

Table of figures

<i>Figure 1.0: Derivation of how might we statement</i>	14
<i>Figure 2.0: Observations</i>	15
<i>Figure 3.0: Affinity mapping.....</i>	16
<i>Figure 4.0: Flow model</i>	17
<i>Figure 5.0 Sequence model.....</i>	18
<i>Figure 6.0: Cultural model</i>	19
<i>Figure 7.1: Competitor analysis mapping</i>	21
<i>Figure 8.1: Empathy mapping 1</i>	23
<i>Figure 9.1: Persona 1</i>	27
<i>Figure 10.0: Story board</i>	29
<i>Figure 11.0: Idea menu card</i>	30
<i>Figure 12.0: SWOT analysis of TENS unit</i>	32
<i>Figure 13.0: SWOT analysis of vibroacoustic therapy.....</i>	34
<i>Figure 14.0: SWOT analysis of Therapeutic massage.....</i>	36
<i>Figure 15.0: SWOT analysis of acupressure</i>	38
<i>Figure 16.0: SWOT analysis of Application</i>	39
<i>Figure 17.1: Front view of glove</i>	44
<i>Figure 17.2: Back view of glove</i>	44
<i>Figure 18.0: Kano model for acupressure gloves</i>	45
<i>Figure 20.0: Wire framing for acupressure gloves</i>	47
<i>Figure 21.0: Prototype for acupressure gloves</i>	48
<i>Figure 22.0: Value proposition diagram for acupressure gloves.....</i>	48

Abstract:

Menstruation is a natural process which requires attention. However, it has been given very little consideration till now; especially amongst working women. Menstruating women face several challenges - mental/emotional and health challenges at work. Menstruation has been associated with many inconveniences and myths. Most of the workplaces don't follow any system to maintain hygienic menstrual health management (MHM). This study is focused on investigating the challenges faced by working women during menstruation and how these challenges affect productivity at work.

1.0 Introduction

1.1 Menstruation

Menstruation happens when female hormones in the body start functioning. It is a sign of woman's fertility. Girls have their first period when they reach puberty. Puberty usually happens between the ages of 9 to 15 years.

Menstruation lasts till woman reaches late-40s or mid-50s.

The menstrual cycle is the monthly series of changes in a woman's body.

Menstrual cycle varies from girl to girl. But generally, the duration varies from 28 days to 35 days for most. However, in some cases it can be as short as 21 days or as long 40 days.^[1]

1.2 Menstrual Problems

Menstrual cycles are often accompanied by a variety of uncomfortable symptoms leading to discomfort and pain. Premenstrual syndrome (PMS) includes most of the common issues, such as mild cramping and fatigue.

Another common menstrual problem is a heavy period. Also called menorrhagia, heavy periods cause you to bleed more than normal.^[2]

Not only can the period be lighter or heavier, but it can also be painful. Cramps are normal during PMS and they also occur when your uterus contracts as your period begins. However, some may experience extreme pain, also called as dysmenorrhea.

It's common to experience both physical and mental during this time. In fact, 30 to 80 percent of women who menstruate are affected by premenstrual syndrome —more commonly known as PMS.^[3]

1.3 Why Menstrual Problems?

The challenges faced by menstruating women have some repercussions on work output and productivity. According to a survey, it was established that, 34% of women in missed work schedule due to menstrual problems.^[4] Also, 27% of women reported physical weakness and/or sickness and 6% felt psychologically affected during menstruation. 32% of respondents were unable to concentrate fully and to give out their best at work during menstruation.^[4]

1.4 Objectives

- 1.4.1 Obtain an overview of menstrual symptoms and their impact on everyday activities in working women.
- 1.4.2 Identify various menstrual problems faced by working women, study health problems and to identify their association with working stress.
- 1.4.3 Collating, summarizing and reviewing the data to improve menstrual health and the challenges faced in doing the same.

1.5 Research questions

- 1.5.1 What menstrual problems are faced by women?
- 1.5.2 What measures are taken to avoid or reduce their effect?
- 1.5.3 How do they affect the overall work schedule?
- 1.5.4 How do they manage these problems at workplace?

1.6 Stakeholders

- 1.6.1 Working women suffering from cramps or other PMS symptoms
- 1.6.2 Manufacturers
- 1.6.3 Product design team
- 1.6.4 Sellers (Pharmacist)
- 1.6.5 Work organizations
- 1.6.6 Owners of the product company

2.0 Methodology

2.1 Design process

Diversifying user research methods ensures more valid and reliable results by considering multiple ways of collecting and interpreting data. Thus, we used Triangulation approach to get better results by applying multiple UX methods

- Definition: Triangulation is the practice of using multiple sources of data or multiple approaches to analyze data, to enhance credibility of a research study. [5]

2.2 Design approach

- User centered design approach

It is an iterative design process based on the users; their needs and interests. It focuses on making the solution usable and understandable by directly involving the stakeholders in the process. It helps understand the user and task requirements clearly

2.3 Defining Design Brief

- Target Group: Working women of age 25 to 50
- Need of users: A product or device which caters and solves the problems of cramps and other PMS symptoms.
- Goals: To study about the problems faced by working women and to propose a solution which caters all their needs and problems.

2.4 Methods used

2.4.1 Contextual inquiry

Contextual inquiry is a UCD method which is used to find out more information about the domain in discussion. Getting to know more about how the current situation is, and noting down key insights on site is an integral part of contextual inquiry. It was first referred as "phenomenological research method" by Whiteside, Bennet, and Holtzblatt in 1988 [11]. But it was developed as a design methodology by Beyer and Holtzblatt between 1988 and 1992. [10] This tool is based on surveys and interviews which require the user to recall and state the required information. Using this method gives more accurate observations about the stakeholders in their workplace. It helps understand the shortcomings or issues in the selected domain.

This method was used to understand the stakeholder's perspective regarding menstrual health problems. I planned on using this method as a tool to get deeper insight in this domain. It helped to understand the needs of a market and to scope the opportunities.

2.4.2 Stakeholder Interviews

Stakeholder interviewing is a method in UCD process where every person affected/related to this domain is interviewed to gain insights regarding the topic of study. Anyone who gives insights relating to the topic in hand can be a stakeholder.

This method helped to understand the stakeholders better so that we can keep them in mind while designing or coming up with a desirable solution. Interviewing them in their workplace is more helpful since it can get more detailed information about their workspace.

This method helped to identify the existing breakdown in the process and gave a detailed overview of the stakeholders.

2.4.3 Affinity mapping

Affinity Mapping is a practice used to organize ideas or insights. It allows large numbers of ideas stemming from brainstorming to be sorted into groups, based on their natural relationships, for review and analysis. It is also frequently used in contextual inquiry as a way to organize notes and insights from field interviews for synthesis and analysis. Using a simple Affinity Diagram technique can help us discover embedded patterns (and sometimes break old patterns) of thinking by sorting and clustering language-based information into relationships. It can also give us a sense of where most people's thinking is focused.

Affinity mapping helped to organize and separate large information, facts, research, ideas, user opinions, user needs, insights, design issues, etc into defined groups.

2.4.4 Flow model

Flow modeling is a method of mapping stakeholders and entities to see how they interact with each other to get the system working. It is used to get detailed idea of how the entire system flows and works. Mihaly Csikszentmihalyi first talked about the concept of flow in his book "Flow: the psychology of optimal experience". The flow model; just like most of the other components of contextual inquiry were developed by Hugh Beyer and Karen Holtzblatt. This method helps to understand the shortcomings and breakdowns that occur in a particular work flow. It contains data from only one stakeholder and the relationship that they have with the rest of the system.

This method was chosen to analyze the flow of menstrual health in the user's perspective. It helped to understand the complete cycle of

menstrual health, and to develop a better understanding regarding the breakdowns of each sub domain.

2.4.5 Sequence model

A sequence model is a diagram used in contextual inquiry to task or process from beginning to the end, displaying triggers, intents, goals and breakdowns and where each of these occur in the process. This tool was developed to identify where there are shortcomings/breakdowns in a particular task. Once the problems are identified finding ways to solve them becomes easier. One task is broken down into smaller subtasks by which we get a more detailed flow to work with.

This method helped to understand how menstrual problems are currently managed in their work places. The model aided in finding the loopholes in the existing system. Speaking to people along the way helped to form a sequence and establish our exiting thoughts in a perspective. It also helped in identifying the breakdowns of each part of the entire process and what has to be done to make it more effective and user friendly.

2.4.6 Cultural model

Cultural model is used to finding out more about the different types of users you are designing for. It's important to know the culture in the user's work space and overall environment. Cultural differences matter a lot when a particular user base is considered. Understanding how people interact and influence each other's decisions is crucial.

I chose to use this method since a variety of cultural factors influence the beliefs and insecurities of menstruating women. Family members, co-workers, friends, myths and social beliefs are important influencers when it comes to menstruation. The cultural model helped see different entities influence the decisions of women.

2.4.7 Questionnaire survey

A survey is defined as the evaluation of experiences or opinions of a group of people via questions as opposed to a questionnaire which is defined as a collection of written or printed questions with an answer choice made to conduct a survey. Questionnaire survey is a technique for gathering statistical data and information about the attributes, attitudes, or actions of a target group of people by setting a structured set of questions suitable for corresponding people and domain of the task. Survey responses are then analyzed and required data is extracted for further process.

Questionnaire was invented by Sir Francis Grangalton, British anthropologists, explorer and statistician in late 1800. Questionnaire forms the backbone of any survey and the success of it lies in the designing of a questionnaire.

The primary purpose of this type of survey research was to obtain information describing characteristics of a large sample of individuals of interest quickly.

2.4.8 Competitive analysis

A competitive map is a visualization of the competitive position of firms, brands, products and services. This is often a basic graph of two variables that customers consider when making a purchase. In the late 1970s competitive business strategy was brought into the main stream through the publication of Michael Porter's five forces framework. A competitor is anyone operating in the market that offers a similar product or service.

A competitors' map helped to view the competitors strategically and then use that knowledge to provide a better service based on the gaps, loopholes, opportunities and good strategies that are identified.

2.4.9 Competitive matrix

Competitor analysis in marketing and strategic management is an assessment of the strengths and weaknesses of current and potential competitors. This analysis provides both an offensive and defensive strategic context to identify opportunities and threats. Combining the relevant sources of competitor analysis helps in effective strategy formulation, implementation, monitoring and adjustment. Conducting a competitive analysis is important for understanding of how your customers rate the competition. It gives an idea of what gives your product an advantage over its competitor. The six factors of competitive advantage are – quality, price, location, selection, service and speed/turnaround.

2.4.10 Empathy mapping

Empathy mapping is tool that helps to get to know the customers or users. By understanding what the customers think, feel, say and do we can develop insights which help to identify genuine issues, problems or concerns that user may have. The empathy map was originally introduced by Dave Gray.

It helped in creating effective solution by understanding the true problem and the person who is experiencing it. The exercise of creating the map helped me to consider things from the user's perspective along with their goals and challenges.

2.4.11 Fictional Personas

User personas are representations of your target customers. A user persona is framed based on researching the needs, goals and observed behavioral patterns of an individual. User personas help to get inside the mind of your audience. Personas were informally developed by Alan Cooper in the early 80's as a way to empathize with the mindset of people. The purpose of personas is to create reliable and realistic representations of the key audience for reference.

2.4.12 Storyboarding

Storyboarding is a visual representation of how a user would go through a particular task before coming up with a solution. It is used to easily view the steps taken and identify the breakdowns to be focused on. Storyboarding was initially started by Walt Disney who used to visualize his films. The method was later applied in UX.

Storyboarding played important part in shaping the user journey, as it helped to understand the entire process of menstrual health issues in working women at their work place.

2.4.13 Idea menu card

Idea cards help design teams to brainstorm solution for vast design problems. They helped to think about a problem in a different way to previously.

I got insights from users about what they want or express which helped in understating crucial points that should be targeted while conceptualizing. I gave basic information and insight about our domain and told them to brainstorm ideas for the solution that they feel is effective, to have ideation from a person with unbiased opinion about the topic.

2.4.14 SWOT Analysis

SWOT analysis or SWOT matrix is a strategic planning technique used to help a person or organization identify strengths, weaknesses, opportunities, and threats related to business competition or project planning.^[12] SWOT analysis can be used in any decision-making situation when a desired end-state (objective) is defined. This process helps to identify the internal and external factors that are favorable and unfavorable to achieving our objectives.

SWOT assumes that strengths and weaknesses are frequently internal, while opportunities and threats are more commonly external.

- *Strengths*: characteristics of the project that give it an advantage over others.
- *Weaknesses*: characteristics that place the project at a disadvantage relative to others.
- *Opportunities*: elements in the environment that the project could use to its advantage.
- *Threats*: elements in the environment that could cause trouble for the project.

2.4.15 Kano model

The Kano model is a theory for product development and customer satisfaction developed in the 1980s by Professor Noriaki Kano, which classifies customer preferences into five categories. The Kano Model is one of many prioritization frameworks designed to help product teams prioritize initiatives. Kano can help teams determine which features will satisfy and even delight customers. Product managers often use the Kano Model to prioritize potential new features by grouping them into categories.

This strict focus on how customers will react to each feature distinguishes the Kano Model from other prioritization frameworks..

With the Kano Model, the key consideration for any new feature is how much it will satisfy users. The Kano Model incorporates five categories: basic, performance/satisfiers, excitement/delighters, indifferent attributes, reverse attributes.

2.4.16 Information architecture

Information architecture (IA) focuses on organizing, structuring, and labeling content in an effective and sustainable way. The goal is to help users find information and complete tasks. Richard Wurman first used “information” and “architecture” together to describe a new profession that gives structure to information to yield meaning.

2.4.17 Wireframes

A wireframe is commonly used to lay out content and functionality on a page which takes into account user needs and user journeys. Wireframes are used early in the development process to establish the basic structure of a page before visual design and content is added. Wireframes are created for the purpose of arranging elements to best accomplish a particular purpose. This discipline is created by L. te Pas.

2.4.18 Pretotyping

Pretotyping is a way to test a product idea quickly and inexpensively by creating extremely simplified versions of that product to help validate the premise that “If we build it, they will use it.” The basic theory, practice and tools for pretotyping were developed by Alberto Savoia while he served at Google as Engineering Director and Innovation Agitator. The purpose and intent of creating a product prototype is to validate the product idea before putting in time and money building an actual “prototype”. Pretotyping helps eliminate the Bad Ideas from the Good. It helps Fail Fast and Fail Often, facilitating product idea evolution towards the “right” product with minimum possible investment of time and money.

2.4.19 Value proposition canvas

The Value Proposition Canvas is a tool which can help ensure that a product or service is positioned around what the customer values and needs. The Value Proposition Canvas was initially developed by Dr Alexander Osterwalder as a framework to ensure that there is a fit between the product and market. It was created as a way to facilitate a core challenge of businesses everywhere – creating compelling products and services customers want to buy. An effective value proposition tells the ideal customer why they should buy from you and not from the competitor.

Value proposition diagram helped me in better customer understanding. It gave me focus and product development direction.

3.0 Problem statement

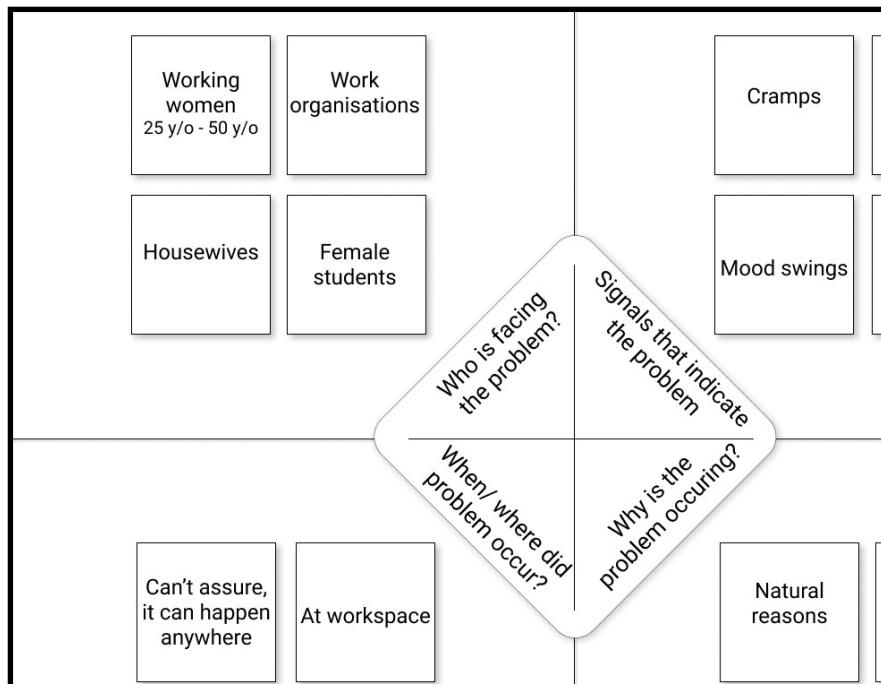


Figure 1.0: Derivation of how might we statement

How might we mapping helped me to formulate our primary problem statement.

How might we solve the issue of inefficiency due to menstrual problems and PMS symptoms in working women?

4.0 Results

After doing the above methods I collected the results. These insights helped in ideation and concept generation.

4.1 Observations from contextual inquiry and stakeholder interview

I got insights about the stakeholders and their relation to one another as well as the breakdowns in the domain through contextual inquiry.

Anxiety	Crabbiness	Cramps in legs	Effect of stress on cycle	Contraceptives affect the cycle
Feeling of not eating anything	No track on dates	Leakage during night	Sensitivity towards certain types of food	Tampons
Acidity	Nausea	Body ache, especially the waist and back	Menstrual cups	Fear of leakage
Breast soreness	Lonely feeling	Mood swings	Have to miss school	drink water to reduce cramps
PMT	Feeling sleepy	Warm heating pads	80% do not have a regular gyno	Expensive pads
Stomach ache	Acne	Hot bags or self heating pads	Tiredness	don't prefer using cups/tampons
Take a leave	Body ache, especially the waist and back	Irregular periods affect health	Pains more in winter	V Wash
Emergency	Diarrhea	Forgets to keep track on date	Problems while asking male shopkeeper	Breakouts on skin

Figure 2.0: Observations

These are the list of observations collected through basic research and stakeholder interview

4.2 Affinity mapping

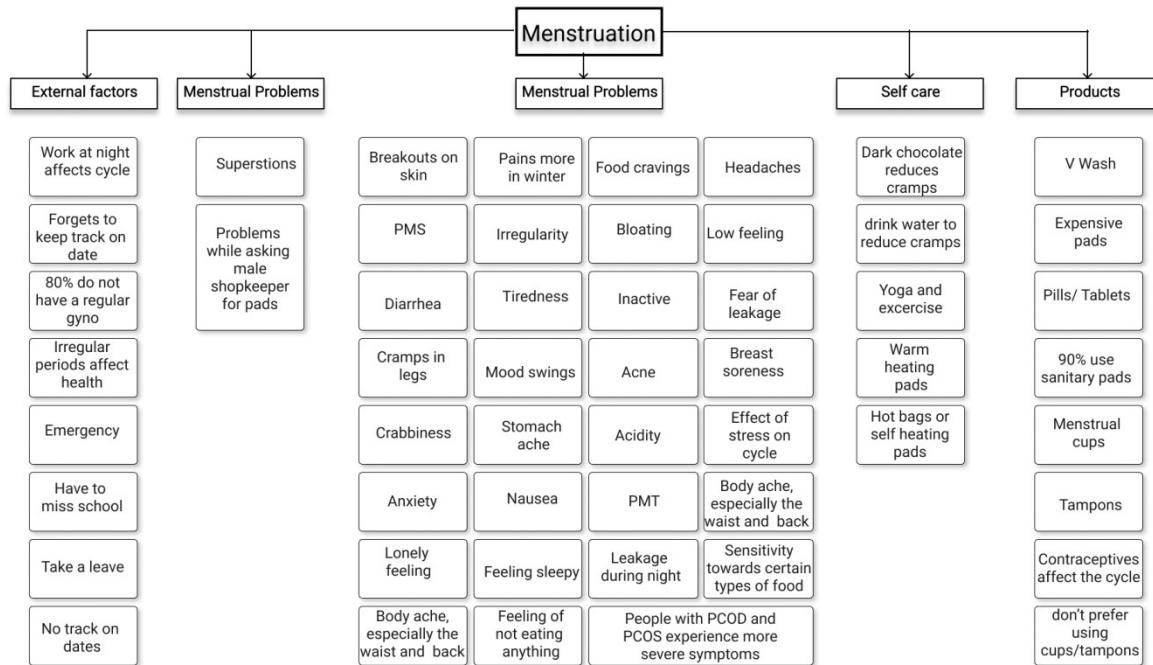
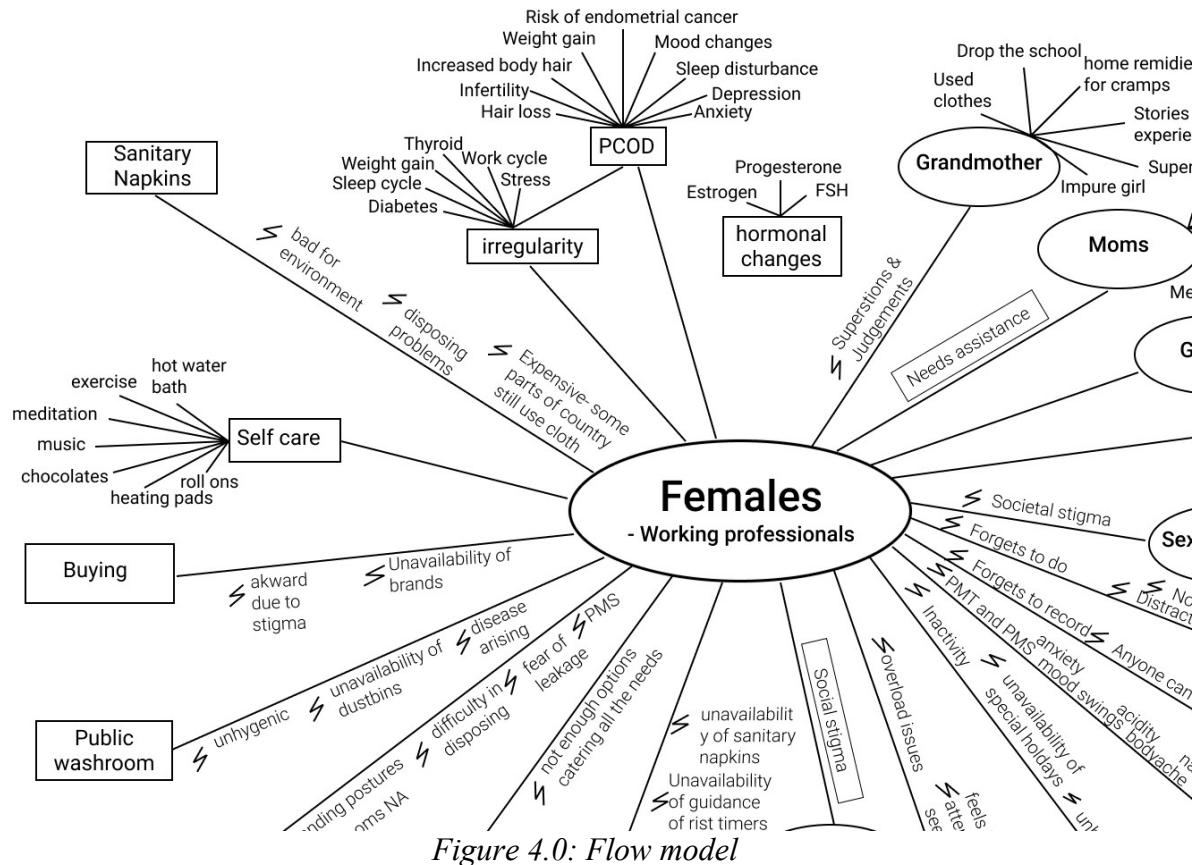


Figure 3.0: Affinity mapping

The affinity mapping is done for the observations collected at the start. It helped me identify the basic domains under menstruation.

4.3 Flow model



This figure portrays the role of each entity related to menstruation. It shows their connection with one another and interaction going on between them.

4.4 Sequence model

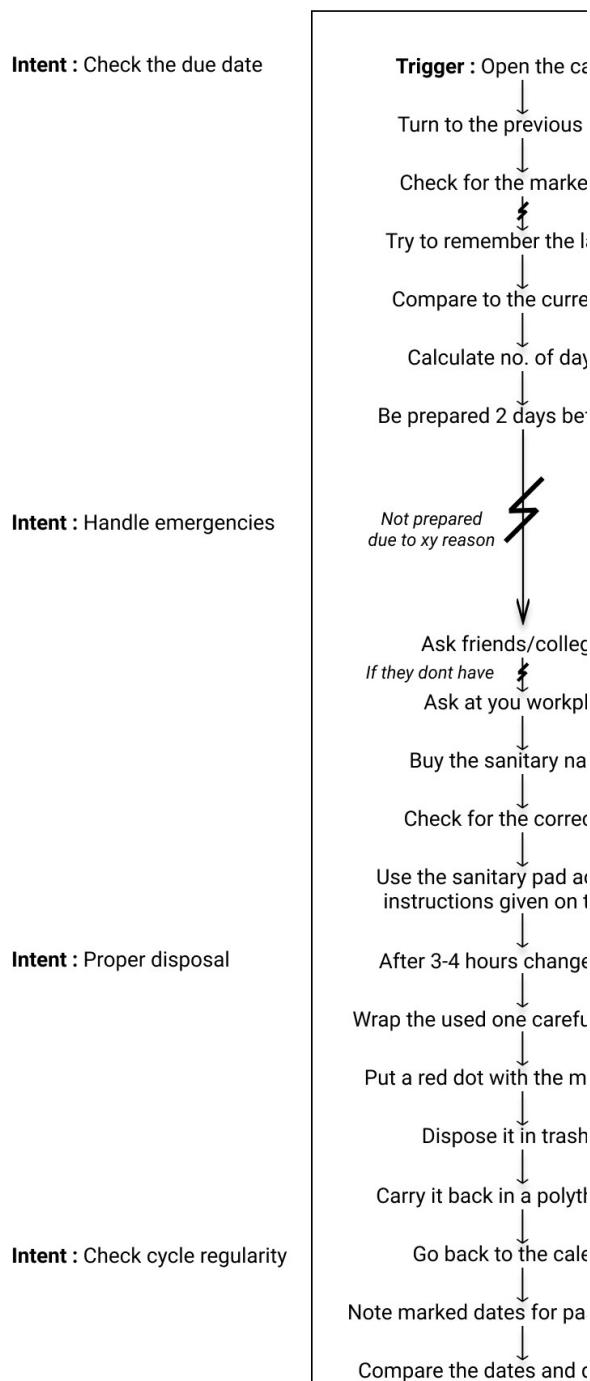


Figure 5.0 Sequence model

The sequence model depicts the way in which different tasks take place. It shows the order of intents and the errors taking place within them. Thus helping to understand where exactly the error is happening.

4.5 Cultural model

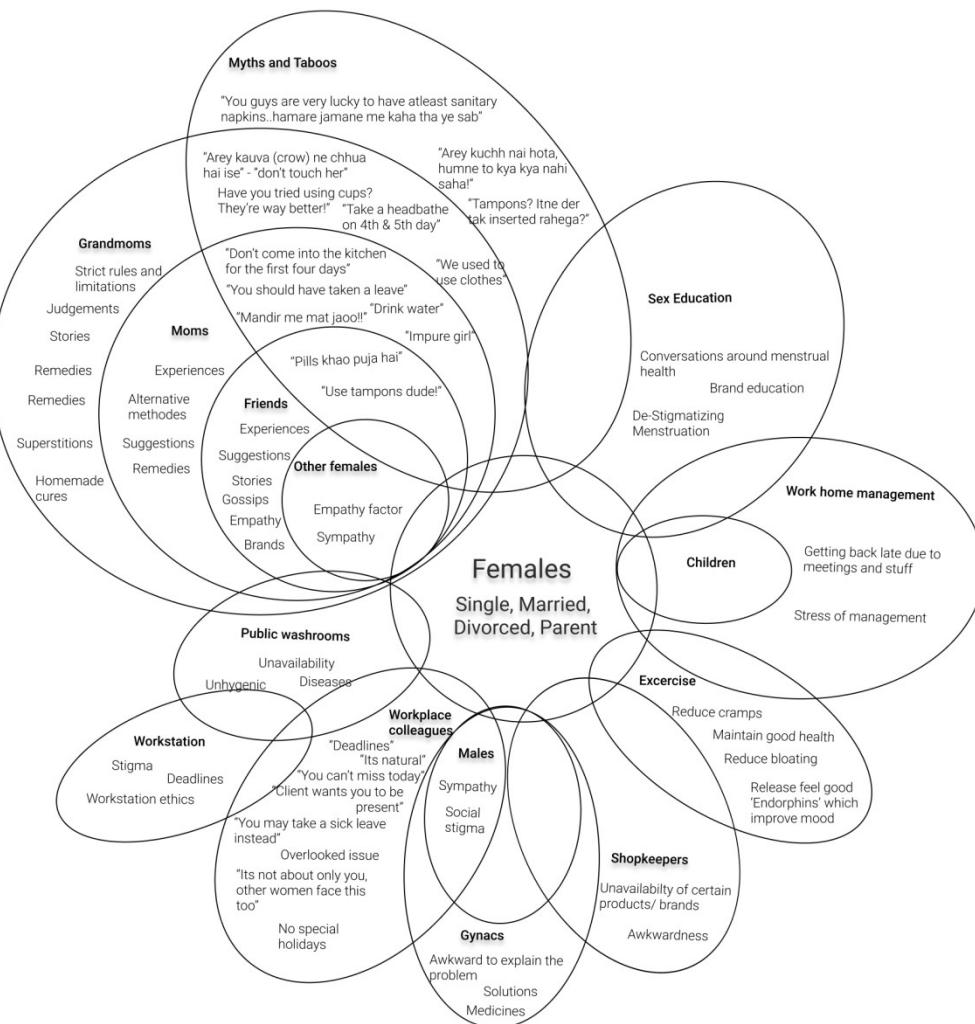


Figure 6.0: Cultural model

Cultural beliefs surrounding menstruation have caused women to be silent on the challenges encountered during menstruation at their workplaces. Some of these beliefs surrounding menstruation include restrictions from entering sacred places, touching religious books etc. Menstruating women are seen as polluted and are not allowed to touch others, cook, nor attend religious gatherings.

4.6 Response statistics

Following are the responses collected from the Questionnaire survey conducted.

- 4.6.1 Out of the **56** people who responded to the survey, **49%** work from the **Registered office of the company**, **30% Work from Home**, and **21% do Field Work**.
- 4.6.2 Out of the **79%** people who have a **Desk job (44 out of 56)**, **45% work over 40hrs**, **36% work under 40hrs**, and **18% work approximately 40hrs** a week respectively. Out of the remaining **21%**, **42% work over 40 hrs**, **33% work under 40hrs** and **25% work approximately 40hrs** a week respectively.
- 4.6.3 Out of the **79%** people who have a **Desk job (44 out of 56)**, **50% never have to travel outstation for work**, **27.2% travel weekly, monthly, half-yearly and yearly** respectively; **20.4% have to travel outstation daily** and **2.2% travel outstation quarterly**. Out of the remaining **21%**, **13.6% never have to travel outstation for work**, **9% travel daily and quarterly** respectively; **20.4% have to travel outstation daily** and **2.2% travel outstation quarterly** respectively

4.7 Competitive analysis

4.7.1 Primary analysis

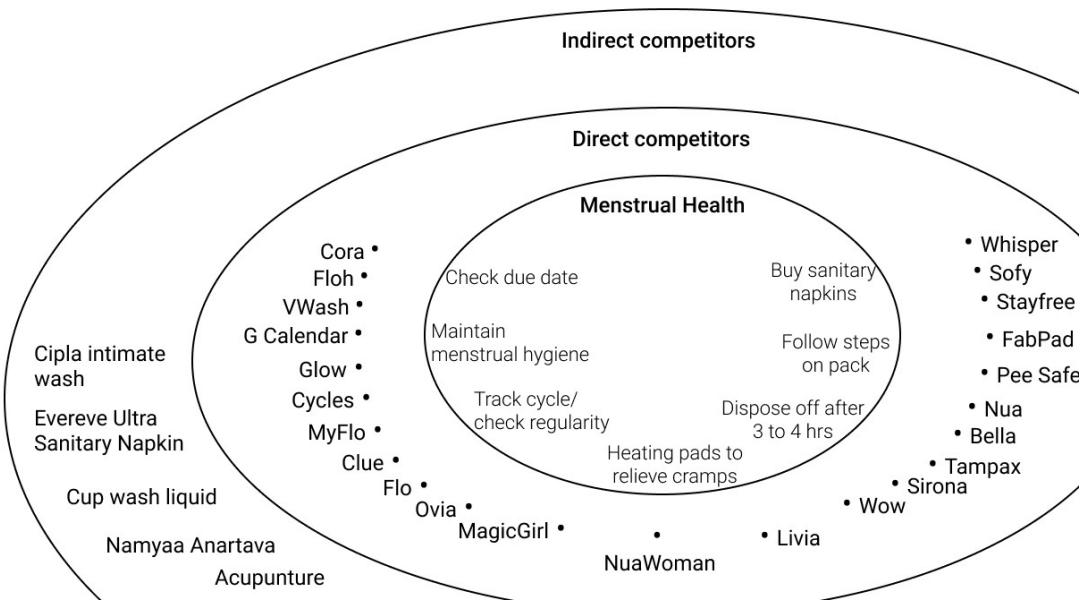


Figure 7.1: Competitor analysis mapping

This diagram shows the direct and indirect competitors in terms of menstruation

1.1.1 Secondary analysis

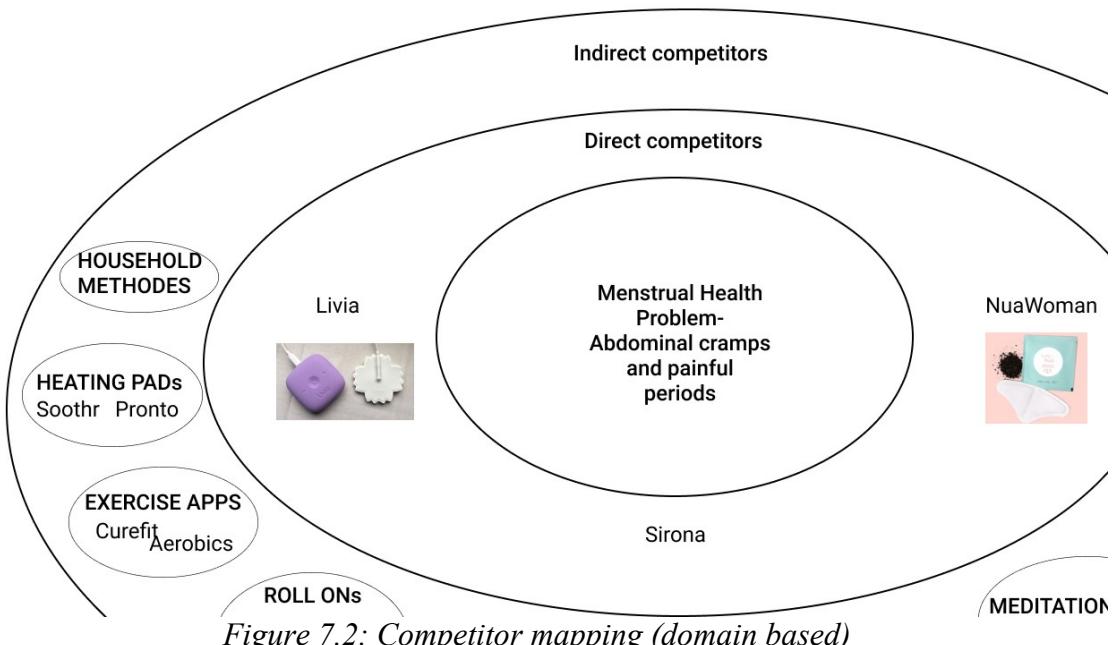


Figure 7.2: Competitor mapping (domain based)

This diagram shows direct and indirect competitors in terms of menstrual problems.

4.8 Competitive metrics

Table 1.1: Competitor matrix of problem solved

FEATURES	Livia	NuaWoman	Sirona	Sanfe (Roll On)	Calm	Headspace	YouTube	Medicines	CureFit	Instagram	Acupressure/ Acupuncture
Eliminates cramps											
Reduces cramps											
Helps to uplift the mood											
Reduces anxiety											
Provides energetic feeling											
Helps with constipation											
Helps with headaches											
Helps with diarrhea											
Provides good sleep											
Helps with nausea											
Helps to stay calm and relaxed											
Relaxes your muscles											

Table 1.2: Competitor matrix of features

	Products	Launched in	Target Audience	Ease of use	Pricing	Strengths	Weaknesses	Opportunities	Threats	UIs	Marketing Strategy	User Reviews
DIRECT COMPETITORS	Livia	2016	Women suffering from severe menstrual pain	High	€ 10.000	Drug free relief. Comfortable, No side effects, Reusable.	Very expensive. Gel pads are a good replacement - this increases the cost again	To make the product more cost efficient so that everyone could afford it	Dangerous for heart patients	Available in different soothing colours	Social media, Advertisements, Newsletters, Subscriptions, Testimonials	Game changing, Life changing, Saving my studies,
	NuaWoman	2017	Women suffering from low or mild menstrual pain	High	€ 299	Natural, Safe to use	Only effective towards mid or moderate pain. Can't be used more than once	To make the product reusable	Dangerous if it is heated to much	Portable and discreet. Simple in design and packaging can be used under any attire.	Advertisements, YouTube, Instagram,	Safe and easy to use, Comfortable, Thin, Super addictive
	Sirona		Women suffering from low or mild menstrual pain	High	€ 249	Relief upto 12 hrs, Natural, safe, No side effects	Only effective towards mild or moderate pain. Can't be used more than once	To make the product easier to use	If wrongly placed, can lead to staining or discomfort.	Packaging is satisfactory buy product uses calm colours.	Amazon offers	Safe and easy to use, Comfortable, Thin, Natural
	Sanfe	2018	Women suffering from low or mild menstrual pain	High	€ 249	Natural, instant and long-lasting relief from cramps	Bad odour	To reduce the odour/ add elements that overpower the odour	Skin infection		Amazon offers	Safe easy and Natural way
	Flo	2013	Women who want to keep a track of their period dates, or monitor fertility and pregnancy	Moderate		Tracks periods; monitors cycle, pregnancy and fertility; connects the user to clinical experts if they need any concern cleared; community chat	Can't reduce/ eliminate pain	To add sections that recommend the user products related to their problems	Privacy issues around data required to enter sensitive and personal details into the app for accurate results	Simple to use and uses pastel colours overall	Locking, Advertising	Best tracker, Premium lock, Charge a lot, Great way to track everything
	Calm	2012	Novice meditators	Moderate	€ 420/ Month	Distracts from pain	Can't reduce/ eliminate pain	Bring in the meditations which directly impact the PMS symptoms	Battery usage may lead to frequent draining, often leading to emergencies	Calm colours and simple format. Images used are in high quality and the overall look of the app is serene and easy to understand.	YouTube, Advertisements	Dark interface, Doesn't work before trial ends, Disappointing
	Headspace	2012	Those committed to starting a new practice or reviving their current meditation practice	Moderate	€ 910/ Month	Distracts from pain	Can't reduce/ eliminate pain	Bring in the meditations which directly impact the PMS symptoms		UI has strong energy inducing colours. The theme changes when switched to Sleep mode.	YouTube, Advertisements	Loved, impressed, Impressed my well being, Good content
	YouTube	2006	Teenage and young adult audience	Moderate	Free	Distracts from pain	Can't reduce/ eliminate pain	Bring in the content which directly impact the PMS symptoms		Addictive design	Advertisements	Love working, hate description boxes, Advertisements
	Medicines		Women suffering from low or mild menstrual pain	High	Varies	Somewhat relief	Can't eliminate pain	Research on medicines which cure cramps and other symptoms	Side effects		Advertisements	Somewhat relief
	CureFit	2016	Women who are looking for fitness regimes, online workouts, yoga, meditation and food charts personalised for their body type.	Moderate	Free	Distracts from pain, somewhat relief. Meditation calms their body and food charts which have some symptoms like bloating	Can't eliminate pain	Bring in the exercises which directly impact the PMS symptoms	Inexpensive people might end up hurting themselves due to lack of human presence	Energy inducing colours used, Attractive UI	YouTube, Advertisements	Helps stay dedicated to workouts, Worst is booking classes
	Instagram	2010	Teenage and young adult audience	Moderate	Free	Distracts from pain	Can't eliminate pain	Bring in the content which directly impact the PMS symptoms	Might lead to social media addiction.	Addictive design	YouTube, Advertisements	Amazing app, Distracts me from any pains, Late notification
	Tide	2017	Teenagers and adults	High		Distracts from pain and helps in focusing on important tasks. App available for all electronic devices	Can't eliminate pain	Add podcasts about related topics	Insomnia like situations might go undetected for long	Calm elements, Simple yet attractive UI.		
	Acupressure/ Acupuncture	2500 BC	All types of diseases	Low		Natural and relief from cramps	Despite of being popular, not used	To bring in a system where these techniques are used and impact cramps and other symptoms	Point to impact may differ and if wrongly done, can end up in serious issues.		YouTube	Very much relief
	DIYs		All types of diseases	High	Free	Distracts from pain, Somewhat relief	Can't eliminate pain	Research on natural ways which cure cramps and other symptoms	Might connect as scary or dangerous for newbies.	Attractive UI which lures visitors, somewhat effective	YouTube	Somewhat relief

These tables show the different problems that each competitor solves along with their detailed features. They helped me to understand our competitors closely.

To view the detailed matrix visit this link:

<https://docs.google.com/spreadsheets/d/1F7ImIXLzjj8TKU58y9ZN-7EI-8UCnbUjTpzBSkGgqNw/edit#gid=0>

4.9 Empathy mapping

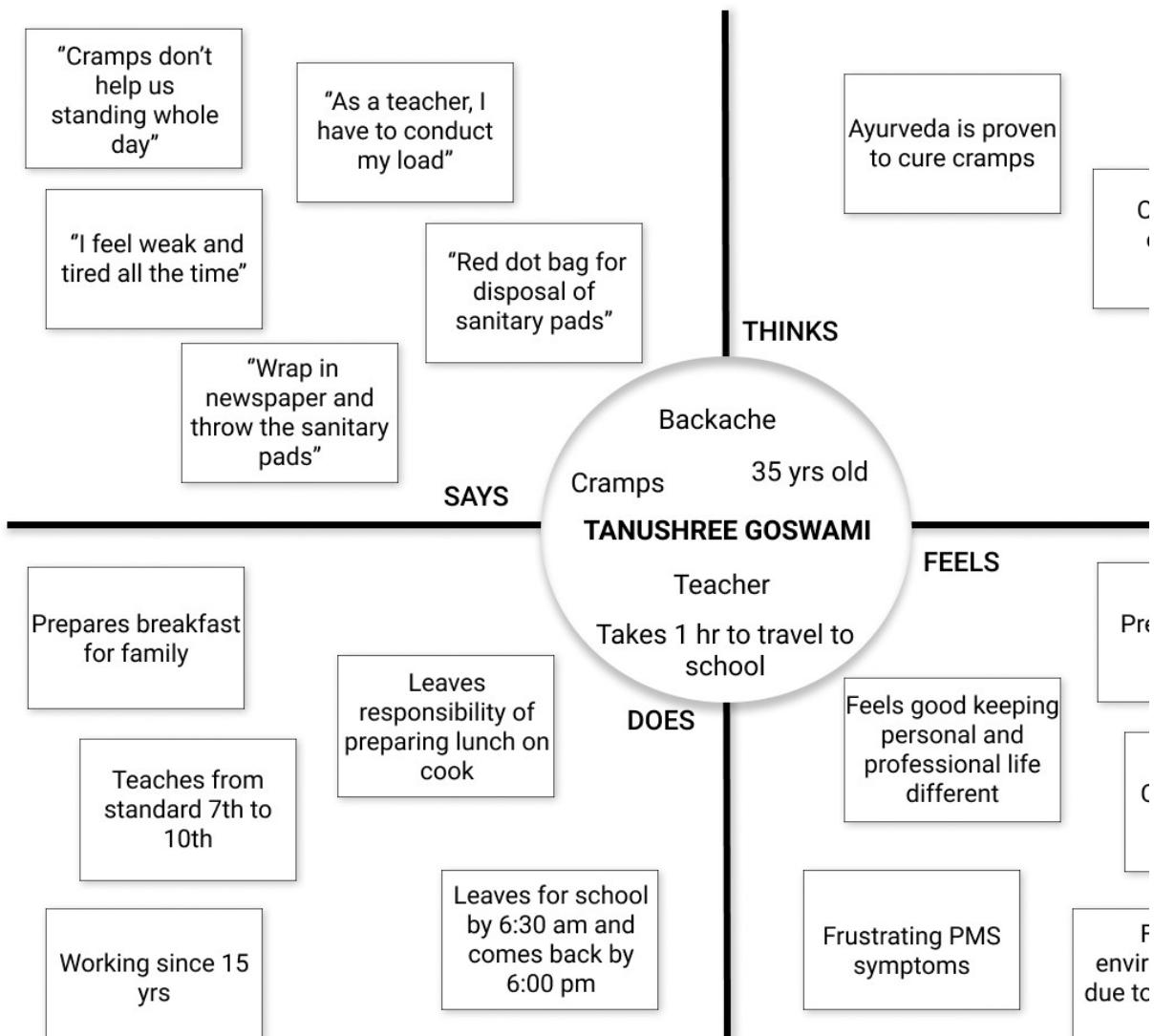


Figure 8.1: Empathy mapping 1

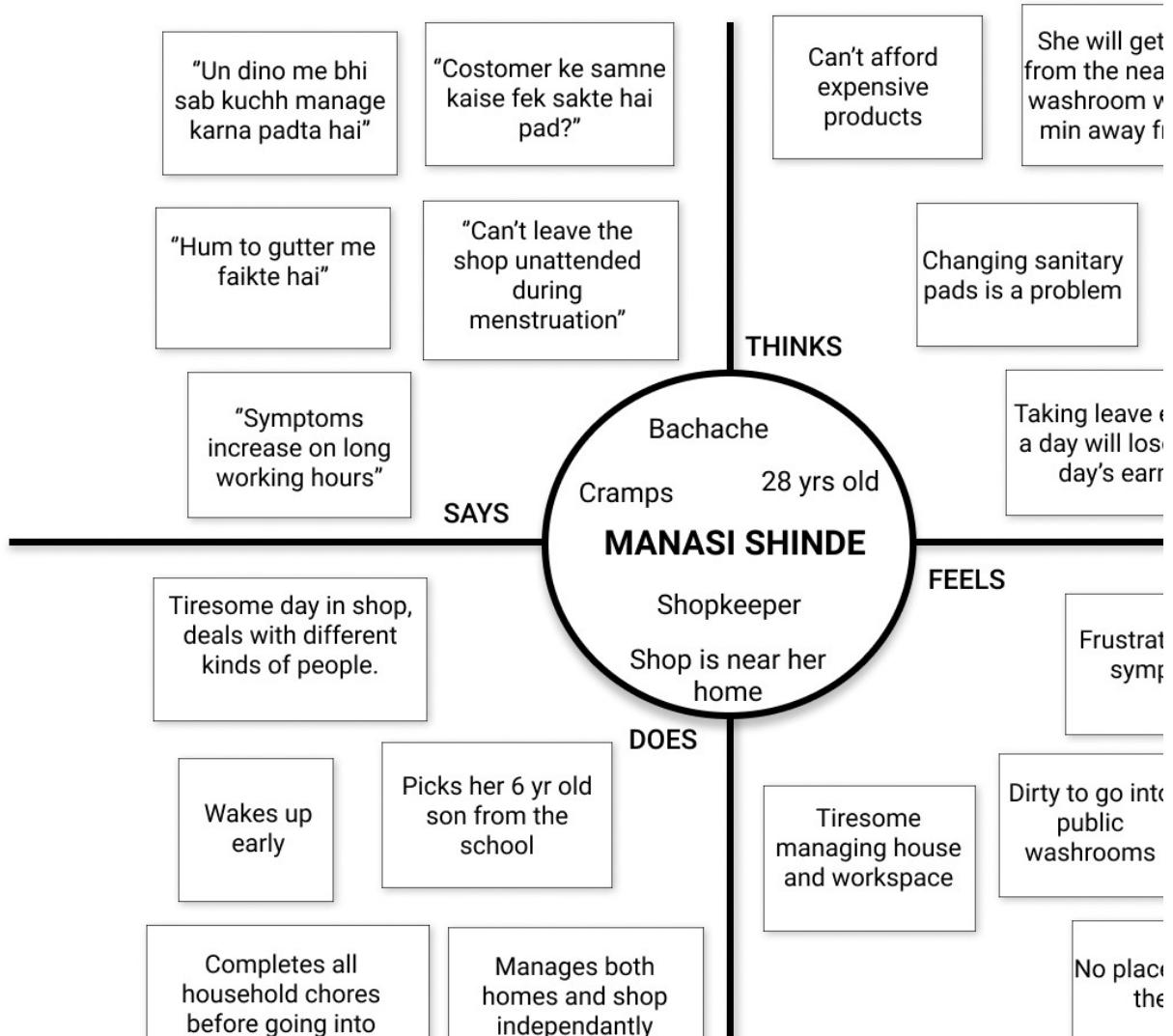


Figure 8.2: Empathy mapping 2

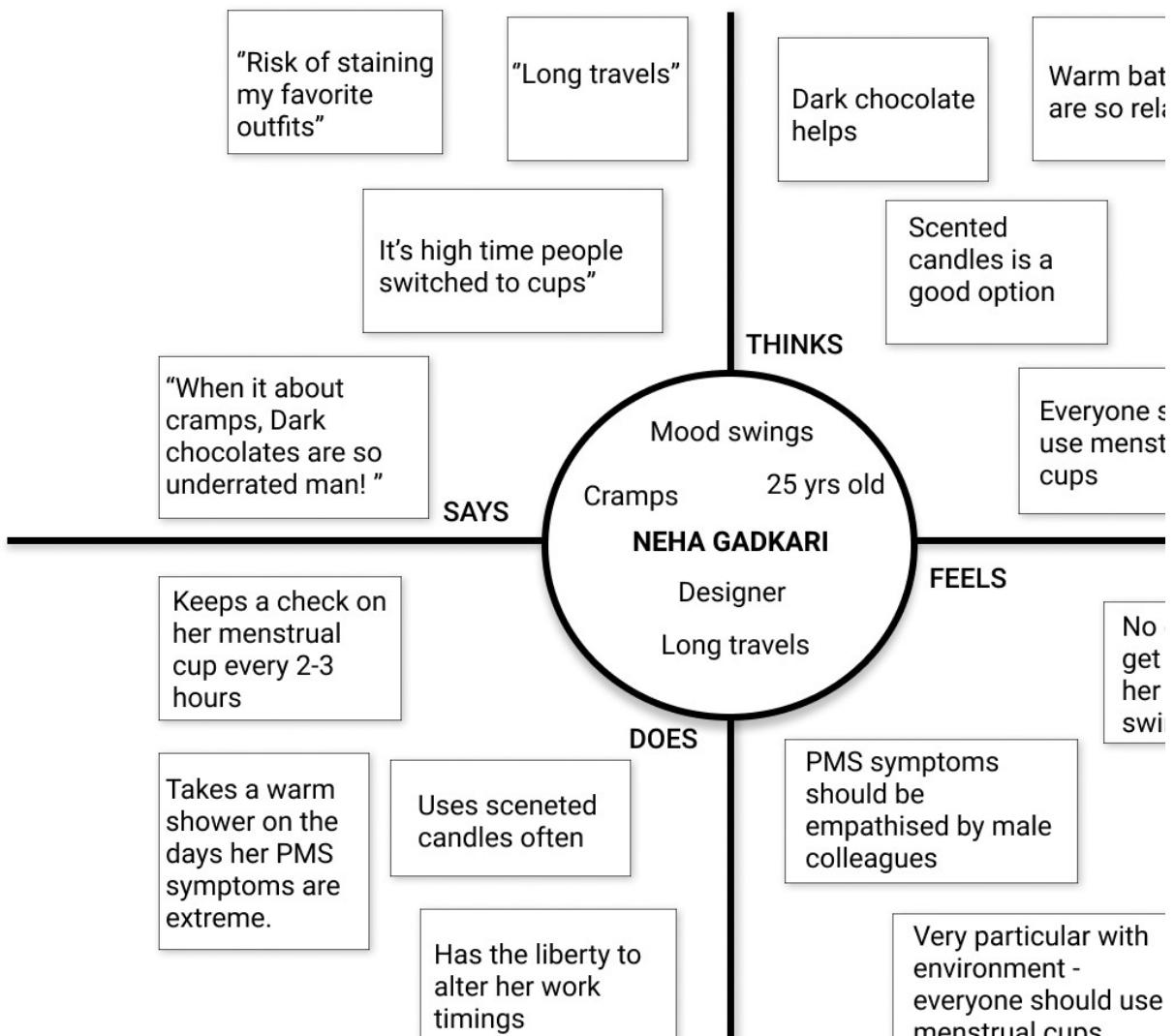


Figure 8.3: Empathy mapping 3

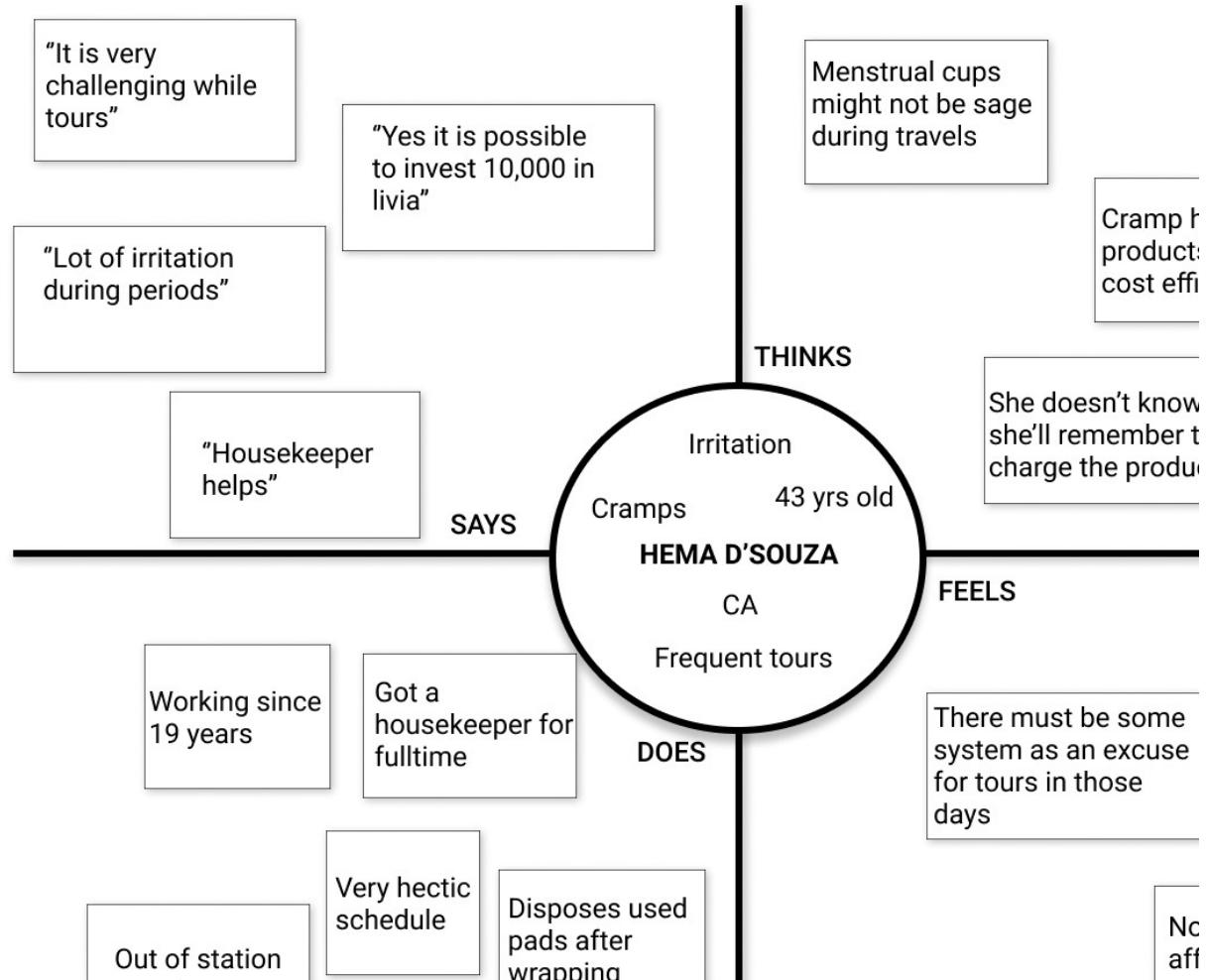


Figure 8.4: Empathy mapping 4

4.10 Personas



Tanushree Goswami

"CRAMPS DON'T HELP US STANDING WHOLE DAY!!"

Tanushree is a senior middle school teacher who teaches from 7th grade to 10th grade since her job and extremely particular about punctuality. She stays at about an hour from her work from 6.30 AM. Tanushree prepares fresh breakfast for her family each morning and leaves the house to complete. She reaches back home by 6 PM after finishing her work for the day. Prefers relaxing with some tea and classical music on the days she hasn't brought back with the irritation that comes with wearing sanitary pads for long durations is often frustrating. She can't afford spending Rs 10,000/- on livia for cramp relief. The washroom in the staff room premises of the school is regularly cleaned but the dustbin disposes the used sanitary pads after wrapping in newspaper.

AGE : 35 OCCUPATION : Teacher WORKPLACE : Asia International	GOALS: To help her work effectively without getting distracted from work due to the stress caused by the symptoms.	GAIN POINTS: Availability and hygiene of washrooms at every floors	NEED: Some cramp relief for her floors
---	--	--	--

Figure 9.1: Persona 1



Manasi Shinde

"UN DINO MEI BHI GHAR/DUKAN DONO MANAGE KARNA HOGA"

Manasi is a college graduate but had to take over her father's shop after his sudden demise from college. She could barely complete her graduation hence. She is married and has a son, works at a construction site and her in-laws have a shop of their own just near to Manasi's complete household chores. Her husband drops their son at the nearby school and she picks him up. On days she's menstruating, keeping a check on the sanitary pad is a problem since she has to take care of all kinds of customers and dealers gets tiresome. Changing the sanitary pads in between with all kinds of customers and dealers gets tiresome. Changing the sanitary pads in between Manasi faces since there are no public washrooms nearby. The nearest washroom is at a distance and always extremely dirty. The last time Manasi used it, she got an infection. She usually washes the sanitary pads without wrapping in newspaper/ plastic.

AGE : 28 OCCUPATION : Shopkeeper WORKPLACE : Grocery shop	GOALS: Something to relieve her from cramps and headaches	GAIN POINTS: She can sit on a plastic chair with the PMS symptoms- backache, cramps, and headache.	NEED: Some cramp relief for her floors
--	---	--	--

Figure 9.2: Persona 2



Neha Gadkari

"DARK CHOCOLATE IS MY ESCAPE ;)"

Neha is straight out of college student who is interning with an up-and-coming company. She has to travel for long durations for her workplace but her work hours are flexible, working 35 hours a week. She also freelances for other brands after work. On days she is menstruating, the only problem she faces is handling her mood swings and irritability at her colleagues! She prefers carrying dark chocolates with her whenever she goes home. Scented candles sometimes help too. She prefers warm baths once she is back home. As it eliminates the risk of staining her favorite outfits, but she has to clean it afterwards if she gets heavy flow.

GOALS:	GAIN POINTS:	NEED:
To find a solution that helps calm Neha and helps her retain her focus.	Liberty to alter her work hours on the days the cramps and other PMS symptoms are severe.	Some sympathy

AGE : 25
OCCUPATION : Designer
WORKPLACE : Designgeek office, Pune

Figure 9.3: Persona 3



Hema D'Souza

"IT'S STILL THE SAME EVEN AFTER ALL THESE YEARS!"

Hema is a very smart and hardworking employee and has been working since 19 years. She is a housekeeper at her place so she has got an escape from household chores for most of the time. She works for 9 hours daily and is very hectic when new meetings line up. She works in a mobile station where she requires travelling and this frustrates her during her menstruation cycle. She often gets irritated and yells at her colleagues. She can afford spending Rs 10,000 on her period but doesn't have enough time and memory to charge it with time. There is usually no assurance of having washrooms but despite of this, she usually carries pads after wrapping in newspaper.

GOALS:	GAIN POINTS:	NEED:
Something which will help with backache and other PMS symptoms.	Someone to help with household chores	Some sympathy other support

AGE : 43
OCCUPATION : CA
WORKPLACE : One of the Standard

Figure 9.4: Persona 4

4.11 Storyboards



Figure 10.0: Story board

This storyboard describes the usual condition of a working woman who has to struggle with meetings and deadlines even in the times of PMS symptoms

5.0 Redefined Problem Statement

How to solve the issue of painful cramps, mood swings and overall inefficiency due to PMS symptoms in working women?

6.0 Conceptualization

I then brainstormed ideas keeping in mind all the insights, pain points, needs and problems identified by performing various methods.

6.1 Ideation

CRAZY 8s			
Ancient Literature	Heating pads	Healing by Music	
Heating belts	Transcutaneous electric nerve stimulation	Ayurveda	
Healing by vibrations	Smart bands	Ancient methodes	
Smart bands	Healing by smell	Vibroacoustic therapy	T
Aroma therapy	Targetting root chakra	Sanskrit vibrations	I

Figure 11.0: Idea menu card

I gave basic information and insight about our domain to few working women and told them to brainstorm ideas for the solution that they feel is effective. I chose this method to have ideation from a person with unbiased opinion about the topic. Then it was narrowed down with my ideas.

6.2 Main Concepts

I came up with 5 main concepts out of all the smaller ideas.

6.2.1 Concept 1 : TENS Unit

Inspired from: Livia

Idea: The product will have pre-installed low cost TENS unit which will help females eliminate the cramps and help working with concentration.

How the users will use this?

- Users will stick the product on the area of belly where the intensity of pain.
- Users may increase or decrease the intensity of frequency according to pain intensity.
- Within 15 minutes relief
- Charge the device

Structure:

- Small semi-circular device
- Diameter = 6 cm

Technical requirements:

- Transcutaneous electrical nerve stimulation
- Gate theory

Pros:

- Immediate relief
- Drug free solution
- Proven effective solution
- Non invasive method of pain relief
- Any time pain relief
- Small and portable
- Can be used individually without any help

Cons:

- Harmful for cancer patients, heart diseases patients, thrombophlebitis, wounds etc
- Might not be affordable for some people
- Burns at sites where electrodes are placed
- Allergy to the adhesives used to affix the pads on skin

Why should one choose this concept?

- Immediate relief
- Anyone can use
- Low/ Moderate/ High pain
- To make the product cost efficient
- Medically proven solution

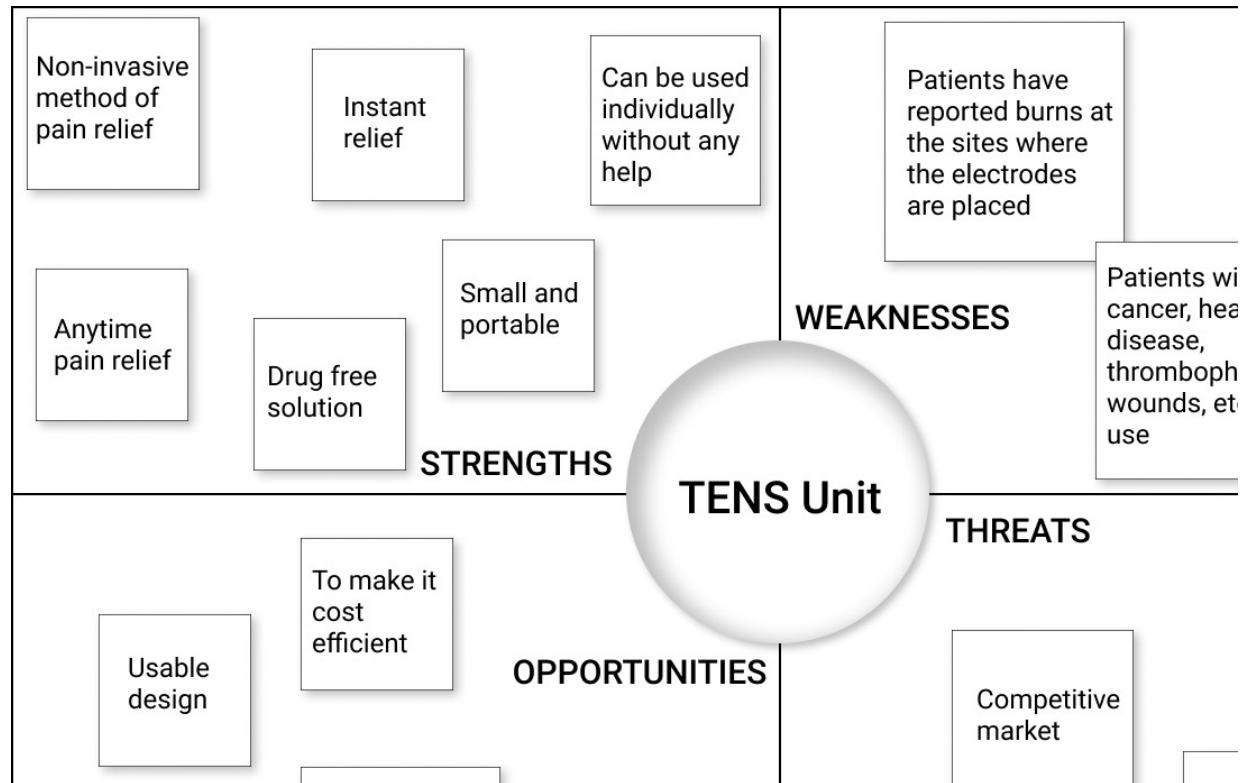


Figure 12.0: SWOT analysis of TENS unit

6.2.2 Concept 2 : Vibration and Sanskrit alphabets

Inspired from: Vibroacoustic therapy

Idea: The product/ app will have features and sounds and music which will help females reduce/eliminate the cramps and help working with concentration.

How the users will use this?

- Preferably, users will have to pronounce the alphabets in a particular manner.
- But, it is acceptable if the users will listen to the recorded alphabets (which are recorded in a particular manner with correct frequency& pronunciation).
- No side effects

Structure:

- Application based product where the Sanskrit pronunciations are already recorded by trained people.
- Users might listen to recordings or learn how to pronounce the letters for better healing.
- Vibroacoustic therapy frequency
- Earphones

Technical requirements:

- Sinusoidal sound
- Frequency (20 - 100 Hz), Pulsation, Scanning, Volume
- Headphones
- Mobile device (if app)/ Any other device which has only the required data

Pros:

- Calm and reach a state of deep relaxation
- Large positive impact in eliminating back pain
- Reduces PMS symptoms
- No side effects
- Proven by scientists
- Entertaining and relaxing process
- Ancient natural process

Cons:

- If the volume of the sound is too strong it can cause side effects such as nausea, disorientation, and change in the sense of equilibrium.
- It might not eliminate cramps but may reduce them to some extent.
- Takes more time as compared to TENS unit to heal
- Long process
- Overlooked method of healing
- Trained therapist is required
- costly apparatus

Why should one choose this concept?

- Being natural

- For those who have moderate or less pain
- No side effects

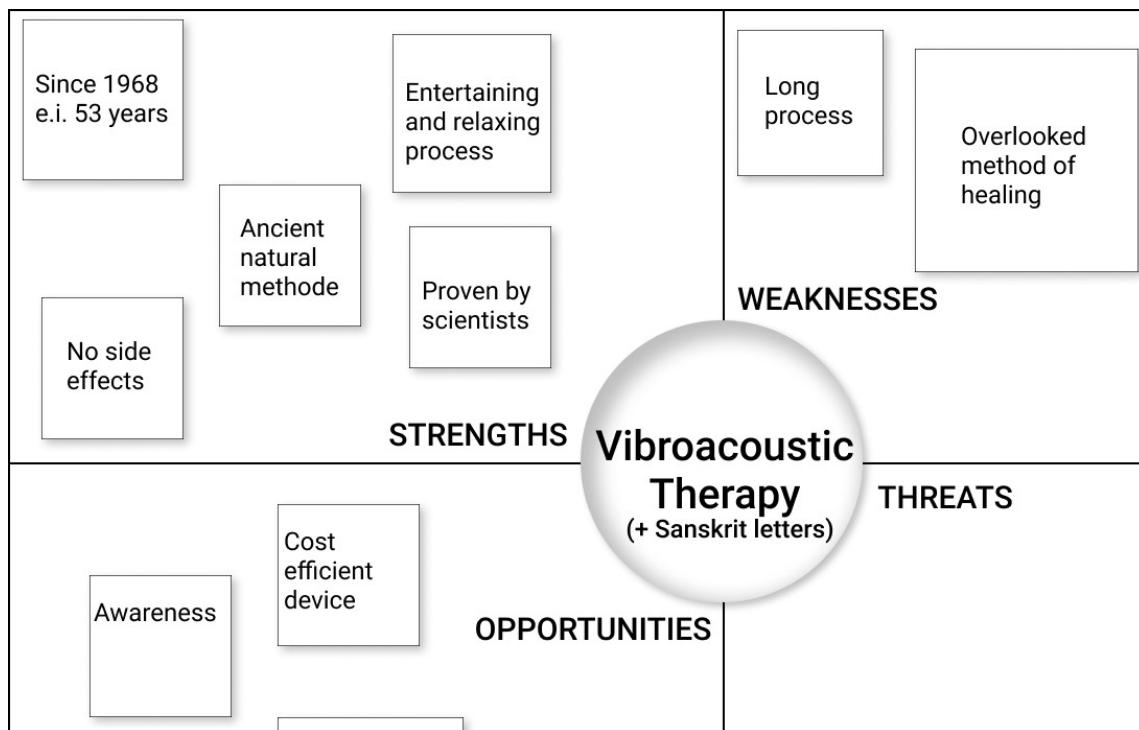


Figure 13.0: SWOT analysis of vibroacoustic therapy

6.2.3 Concept 3 : Massage and heating belt

Inspired from: Therapeutic massage

Idea: The product will have pre-installed low cost massaging facility which will help females reduce/ eliminate the cramps and help working with concentration.

How the users will use this?

- Users will just place the belt in the area of pain.
- Users will adjust the power of massage/ heat acc. to the intensity of pain.

Structure: Belt like

Technical requirements:

- Sensors
- Heating pads

Pros:

- Cost efficient
- Easy to use
- User might stop the belt anytime
- if at all it causes any discomfort
- Improve circulation and relaxation
- Intensity can be changed according to pain
- Reduces PMS symptoms to much extent
- Reduction of stress hormones

Cons:

- If at all any, error might cause discomfort
- Time engaging
- Manual effort required
- Discomfort during deep tissue massage
- After effects
- Limited area of healing (Limited symptoms)
- Trust issues

Why should one choose this concept?

- Very less chances of error
- Cost efficient

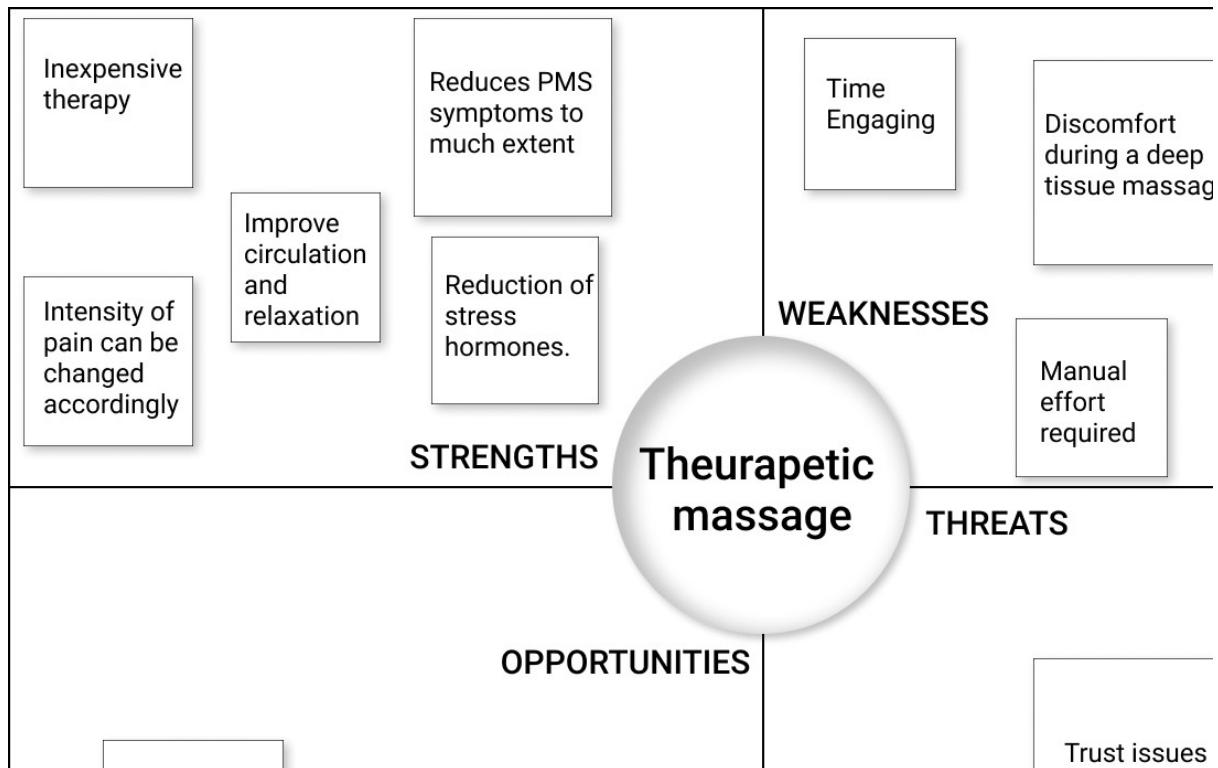


Figure 14.0: SWOT analysis of Therapeutic massage

6.2.4 Concept 4 : Acupressure device

Inspired from: Acupressure techniques

Idea: The product will have pre-installed low cost sensors which will sense the correct acupressure point and will help females eliminate the cramps and help working with concentration.

How the users will use this?

- Users will place the device on the mentioned area according to the requirements. (Different acupressure points for each pain/ problems.)
- Product/ device will be ergonomically designed
- Sensors will sense the correct position of the acupressure point and will let the user know if he/ she is going correct.
- Device will enable user press the option to start healing, once the user is successful in attaining the position.

Structure:

Technical requirements:

- Sensors
- Ergonomics

Pros:

- Traditional methode - Builds trust in users
- No side effects (Only if there is some error - Side effects are possible)
- Self healing alternative
- Trusted methode
- Safe and pleasant way to self care
- Since 2500 BC
- Ergonomically proven
- Natural method

Cons:

- Error might cause some side effects
- Limited to some diseases
- Impact stays for 2 hrs only
- Wrong points due to manual error may cause side effects

Why should one choose this concept:

- Traditional ways
- Promotes being naturalness
- Very less chance of error

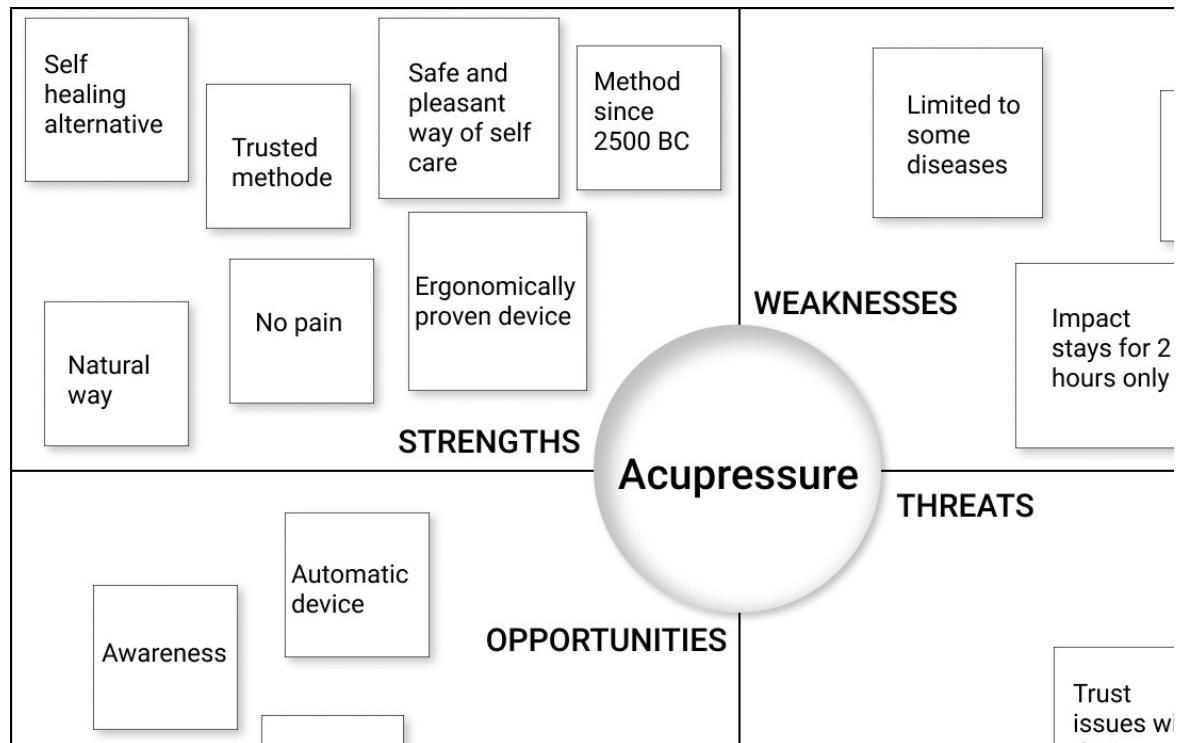


Figure 15.0: SWOT analysis of acupressure

6.2.5 Concept 5: Application

Inspired from: Flo/ Period tracking apps

Features

- Tracker
- Q/A platform for users to users
- Doctor/pharmacist collaboration
- Medical/clinic near you
- Rating system
- Pros and cons of diff products
- Voice info or informative video/text
- Eating schedules
- Instructions for moms
- Suggests Exercise
- Informs Due dates
- Regularity check
- Privacy
- Language options

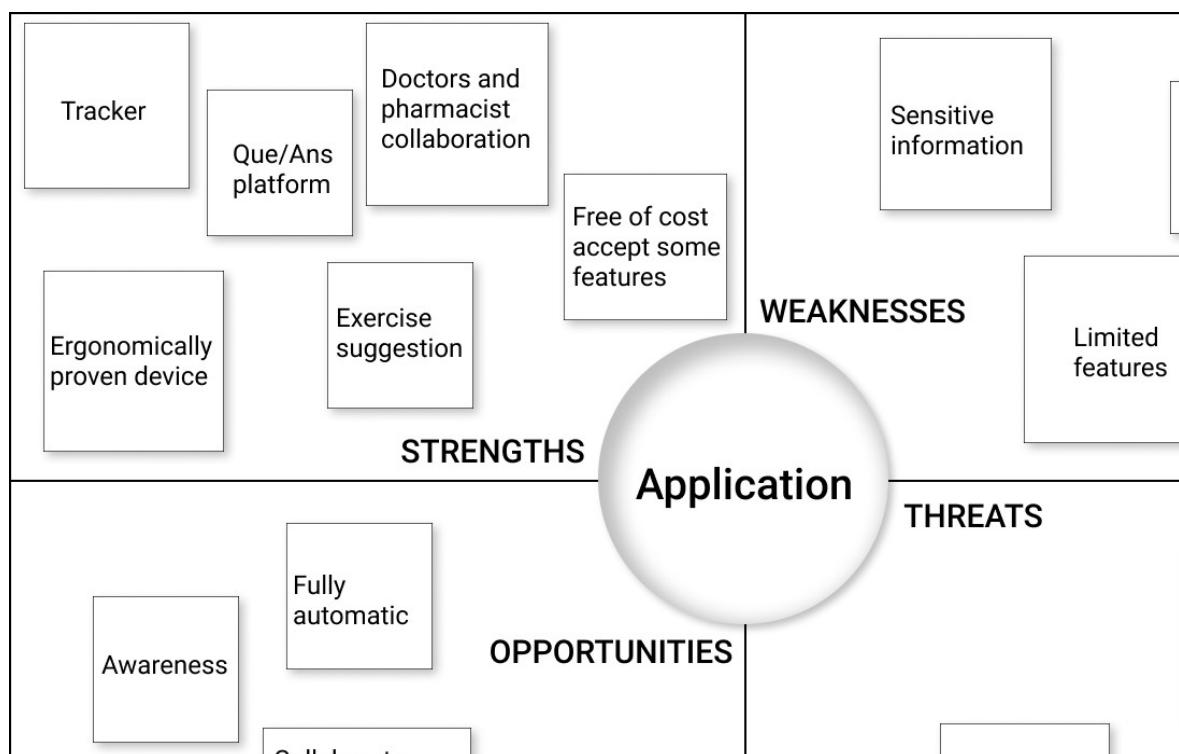


Figure 16.0: SWOT analysis of Application

6.3 Selection of final concept

I did the selection of our final concept based on the results of the SWOT analysis done for each of the 5 main concepts.

The first concept proposed was a TENS Unit device with a built-in digital interface which would use electronically generated vibration waves in a controlled manner to provide pain-relief to different parts of the body.

While the product is highly effective and reports no side effects, it cannot be used without the supervision of a trained professional and is a long as well as costly process, especially as a solution for the problems faced by the users in our domain. Thus, I decided to keep exploring further for better alternatives to this solution.

The next proposed concept was Vibroacoustic Therapy through the pronunciation of Sanskrit letters. While the meditative approach of this procedure carries no risk of side effects and is moderately effective, it is a lengthy procedure which might take several sessions before the effect is observed. Moreover, the product would not be attending to the users in the target group who do not believe or prefer the procedures involving the meditative techniques, thus decreasing the available market for the product.

The third concept proposed was an electric massager which would be a cost effective approach to the already existing products and would have more user personalized features in the interface as an added upgrade. It was however observed that with the already busy schedule that working professionals have, a majority of the users would not be able to frequently use the product due to the time constraint. Moreover, the product would be of the size of an average recliner, so the size of the product would be an issue for users who work in cities away from their hometown, or constantly shift living spaces.

The fourth concept proposed was a Digital Application compatible with smart phones and smart watches. The application would not only have already existing features found scattered in multiple apps such a tracking periods, ovulation, pregnancy, reminders about upcoming dates, tailored plans for diet and exercise, etc. but also have additional features such as therapeutic audios proven to reduce anxiety, and the combined interfaces of concept 3- Vibroacoustic Therapy. The concept was, however not taken forward because even though it brings the best of features available in tracker apps all in one platform for the users, it would not directly curb any problems faced by the user health-wise, only reduce it to some extent. The need of the hour is to conceptualize a product that provides long term effects and makes it easier for the working professionals to balance their work and health during their menstrual cycle.

Thus, the final concept proposed is a pair of gloves with embedded acupressure points. Acupressure has for long been a proven and effective way to handle health concerns of varying degrees. Symptoms such as bloating, headaches, etc. can easily be reduced, if not completely gotten rid of, through this method if the points are accurately targeted. The method takes a few minutes before the effects are observed, and does not pose any side effects. The gloves aim to let the user select the symptoms they wish to cure (headache, nausea, etc.) through the embedded interface, which would in turn command the attached points to press the target areas.

It has been kept in mind that the size of palm and hands differs from person to person, thus the product will observe extra accuracy in detection of pressure points for users.

6.4 Final Concept

6.4.1 Concept brief :

Name: Acupressure device with embedded interface

Concept Inspiration: Acupressure techniques

Product Structure Inspiration: Gloves worn for parties and balls

About this concept: Ancient medical theory describes special acupoints, or acupressure points, that lie along meridians, or channels, in our body. These are the same energy meridians and acupoints as those targeted with acupuncture. It is believed that through these invisible channels flows vital energy -- or a life force. It is also believed that these 12 major meridians connect specific organs or networks of organs, organizing a system of communication throughout our body. The meridians begin at our fingertips, connect to our brain, and then connect to an organ associated with a certain meridian.

According to this theory, when one of these meridians is blocked or out of balance, illness can occur. Acupressure is thought to help restore balance. Acupressure has for long been a proven and effective way to handle health concerns of varying degrees. and has for long been an effective and proven way to cure conditions like back pain, headache, fatigue and tension, feelings of melancholy, and immune system deficiencies. Symptoms such as anxiety, stress, etc. can easily be reduced, if not completely gotten rid of, through this method if the points are accurately targeted. This method takes a few minutes before the effects are observed, and does not pose any side effects. It has been observed that there are long term health benefits if acupressure is used regularly.

About the product: Thus, the final concept proposed is a pair of gloves with embedded acupressure points and a digital interface. The gloves aim to let the user select the symptoms they wish to cure (headache, nausea, etc.) through the embedded interface, which would in turn command the attached points to press the target areas. It has been kept in mind that the size of palm and hands differs from person to person, thus the product will be ergonomically designed to observe extra accuracy in detection of pressure points for users. The primary material for these gloves will be Neoprene- the brand name for Chloroprene. Chloroprene is a synthetic rubber material with good heat isolation properties. It has also good protection against oil, fat, organic hydrocarbons and acids when it comes to chemical protection. A seamless knitted work glove can be coated by different materials like nitrile, PU, latex or PVC. There are different levels of coatings depending on requested properties: Palm dipped, knuckle dipped, fully dipped, fingertip coated and/or dots in the palm area. These different levels of coatings depend on how deep and in which angles the knitted liner has been dipped in the coating bath. A fully dipped glove has

coating all the way up to the cuff while a fingertip coated glove has coating only on the fingertips. The gloves would cover the area from the fingertips till the wrist.

Features:

- Set the intensity of pressure points and change as and when needed
- Ergonomically designed device
- Stop the device whenever user wants
- Small and portable device
- Safe and pleasant way to get rid of headaches, etc.
- No side effects
- Can be used individually without any help
- Natural way
- Anytime pain relief
- Chargeable device

How to use it or steps: Users will wear the gloves as mentioned and select which symptom they want to target through the interface (Different acupressure points for each pain/ problems.) Product/ device will be ergonomically designed and will have pre-coded points for each symptom, so once the user selects the desired option, they can sit back and let the gloves do their job with ease. The device will enable user press the option to start, stop and pause the procedure. Once over, the product displays a concluding message after which the user can decide if they want to continue using the device for another session or not. Each session will last for about 15 minutes.

Technical requirements:

- USB Port for charging
- Rechargeable
- Sync with the embedded interface through pre-coded commands

Pros:

Being a traditional method, it builds trust among users for effectiveness. No side effects if product is used as per the instructions and worn properly. While acupressure can be done by the user themselves manually or with the help of another person (trained or otherwise), it is a good self healing alternative as long as the accurate points are targeted. It is a trusted method that is safe and side effect free. The product is portable, can be used anywhere once charged. Since it will be ergonomically designed, it will cater to all the users willing to use the procedure, irrespective of the size of their hands. Since the procedure is ultimately a mechanical approach to a manual self-healing remedy, it also ensures accuracy of points targeted and that optimum pressure is imposed on target points for effectiveness.

Cons:

The product will be limited to some symptoms and the impact would last for a few hours only, Wrong points targeted due to error in

application of gloves may cause ineffectiveness, and in some cases, side effects.

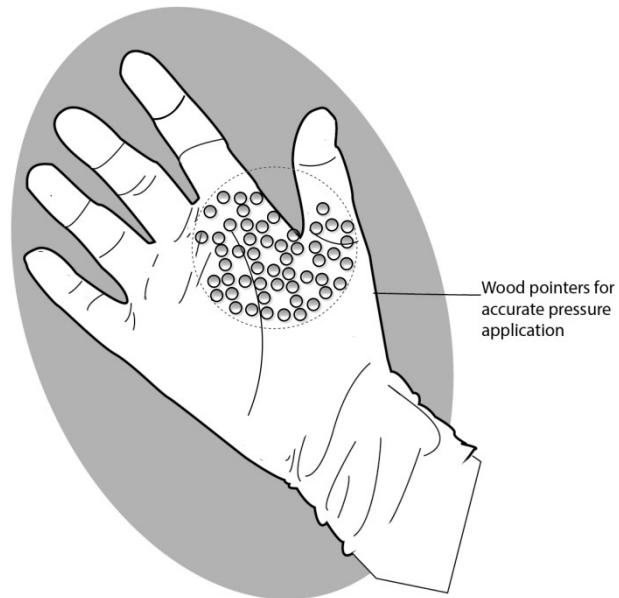


Figure 17.1: Front view of glove



Figure 17.2: Back view of glove

6.4.2 Kano model

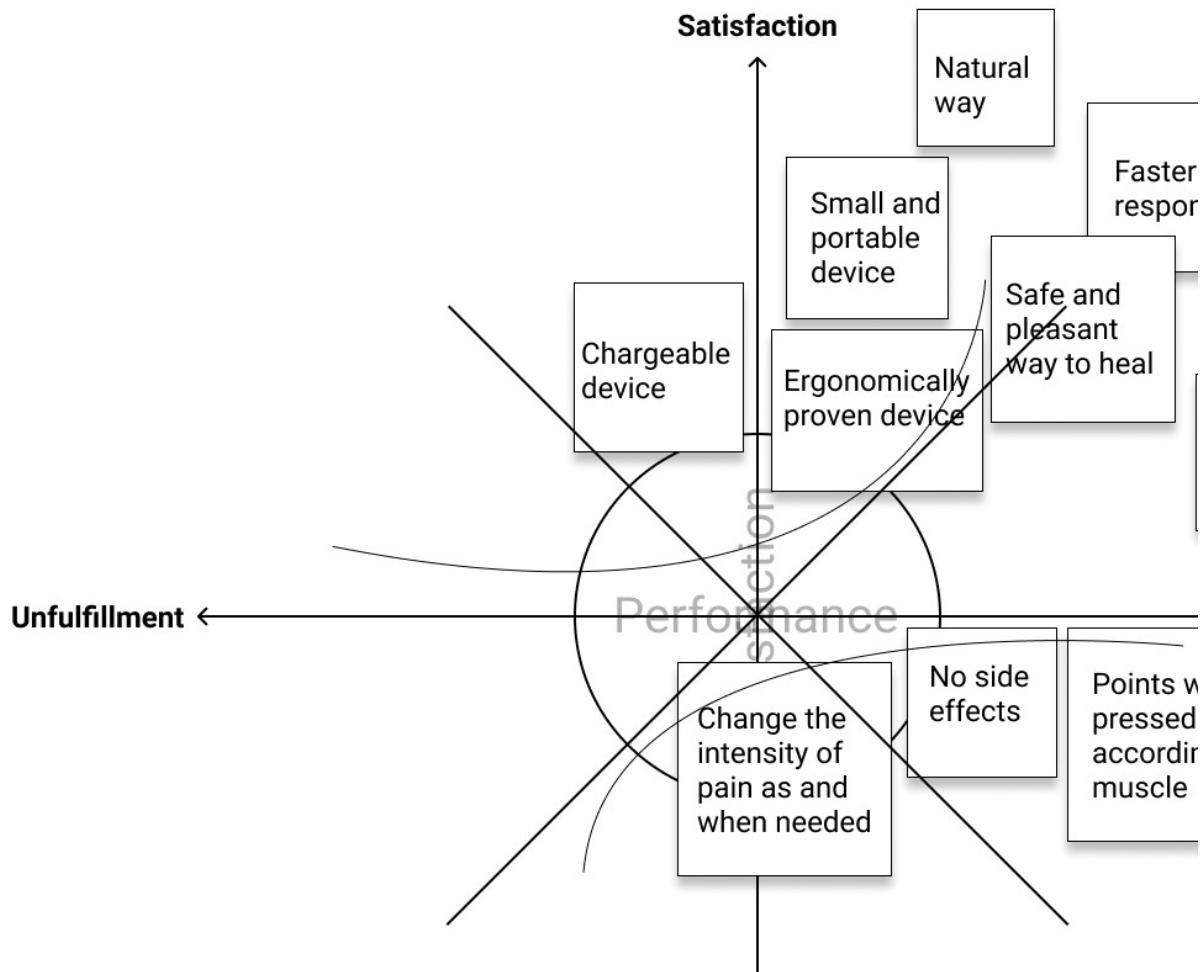


Figure 18.0: Kano model for acupressure gloves

No side effects, points will be pressed according to muscles, set the intensity of pain, stop the device whenever user wants, change the intensity of pain as and when required are the must be features which a customer expects a product to have. Safe and pleasant way to heal, ergonomically proven device, Natural way and portable and small device are attractive features. These are the surprise elements that can really boost your product's competitive edge. They are the features that customers don't even know they want, but are delighted with when they find them. Chargeable device is an indifferent feature whose presence (or absence) doesn't make a real difference in our reaction to the product.

6.4.3 Information architecture

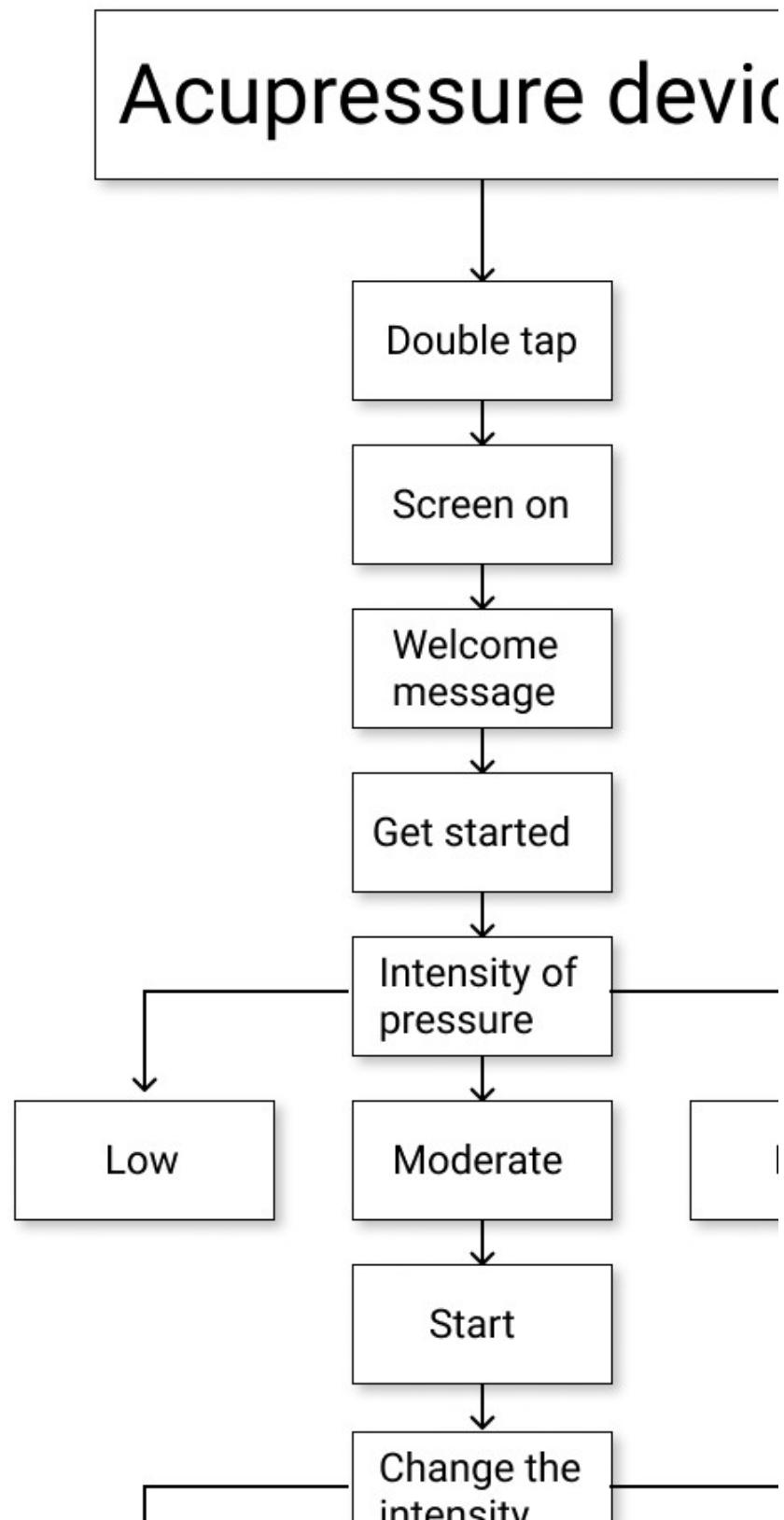


Figure 19.0: System flow of acupressure gloves

6.4.4 Wireframes

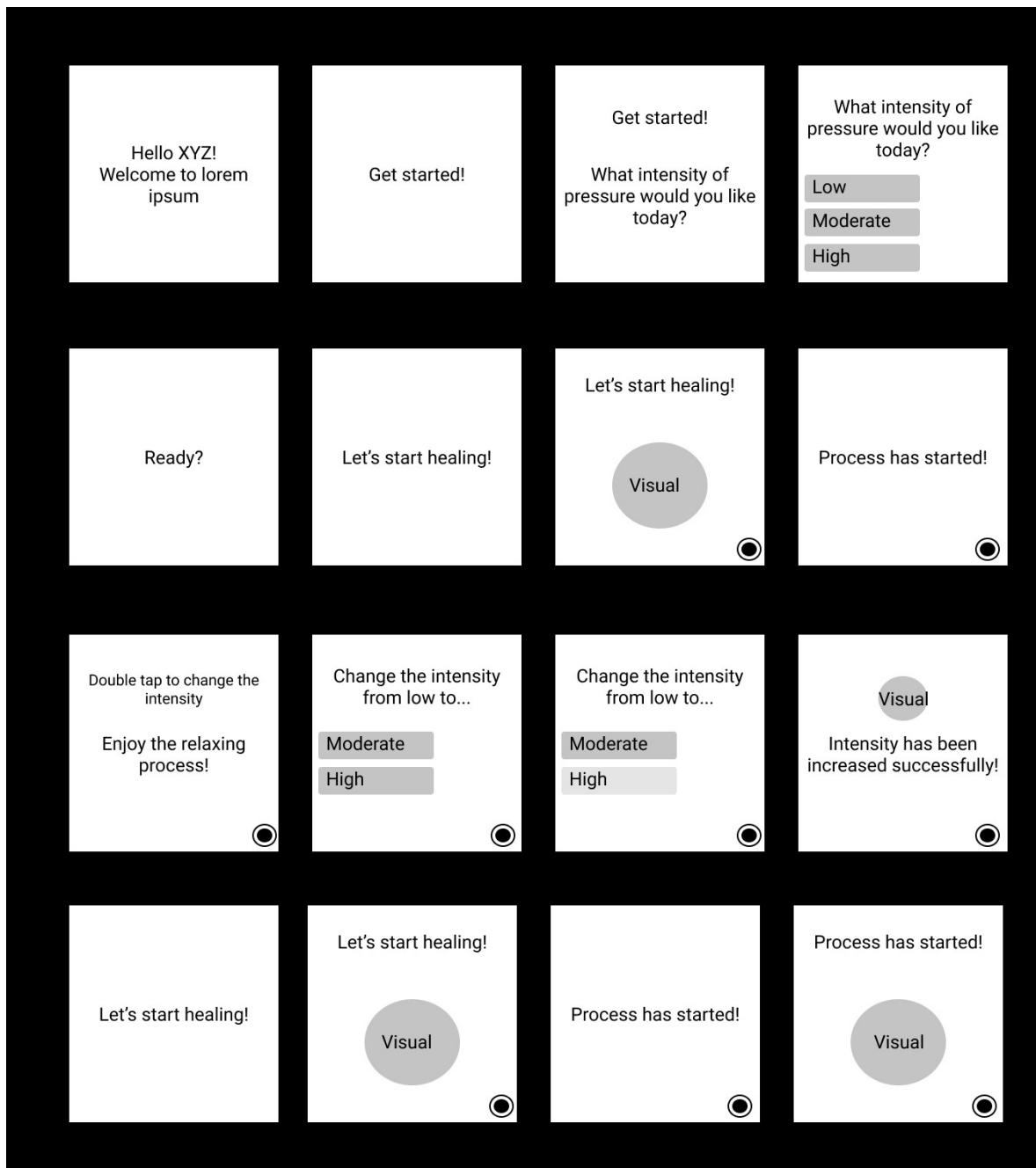


Figure 18.0: Wireframing for acupressure gloves

The low fidelity wireframes helped to analyze the basic structure of our interface part beforehand. It gives an basic idea of how the screens will work.

6.4.5 Pretotyping

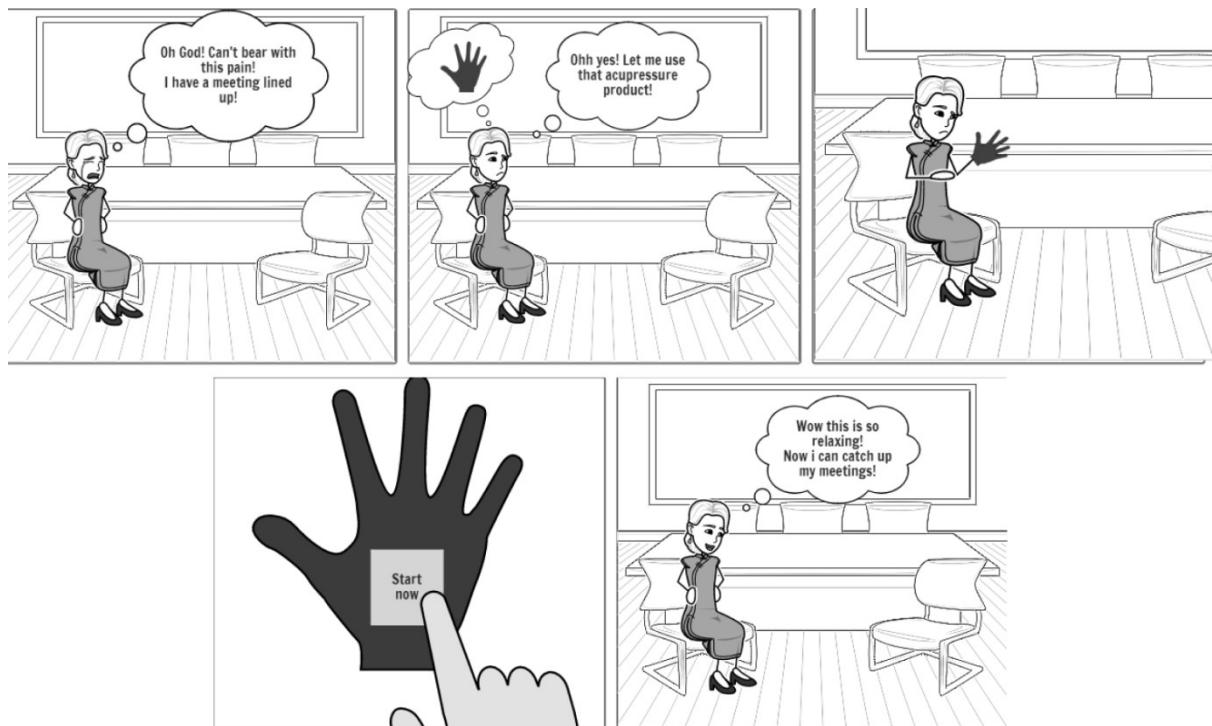


Figure 19.0: Pretotype for acupressure gloves

This diagram of prototype gives an idea about how the gloves will work without actually making the prototype.

6.4.6 Value proposition diagram

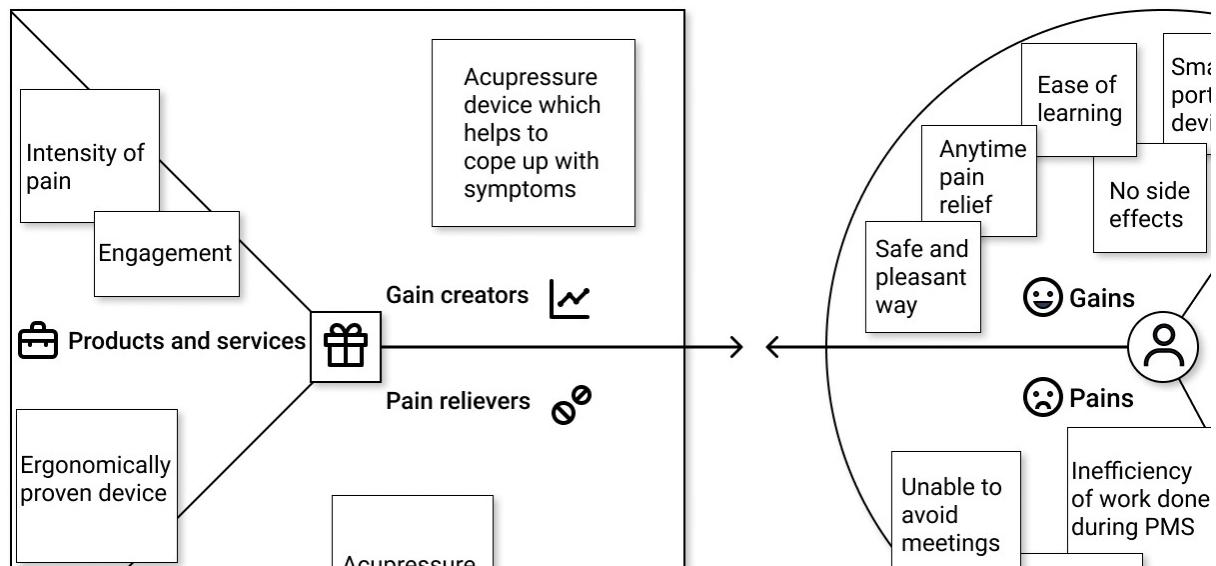


Figure 20.0: Value proposition diagram for acupressure gloves

7.0 Conclusion

7.1 Insights and Learning

Menstruation is a very vast domain in itself. After a thorough research I came across new information and domains about this arena which weren't known to me previously. Extensive research was used to accumulate all sorts of data. Different methods helped me to analyze large set of information. I learned to empathize with different groups of users, their needs and requirements. Few other methods also assisted me in knowing the competitors, stakeholders and market situation.

7.2 Contribution

Menstruation is a very serious subject which has been neglected in the past. Menstrual issues haven't been given the required attention. These problems if neglected can cause serious harm in the future. Menstrual problems have been prevalent in females, especially working women. I felt this was a good opportunity to explore these issues and work on them to propose usable, satisfactory and cost efficient solutions that can be used by working women at their workplaces.

7.3 Constraints

Doing research under the domain of menstrual problems in working women requires observing and interviewing them at their workplace. But due to COVID-19 pandemic it wasn't practically possible. Many women couldn't tell me the details as they found it personal. As menstruation is a sensitive topic collecting appropriate and detailed information was difficult.

7.4 Future scope

Lot of research has been done in this domain till date. Many new cost efficient products are now available in the market. Few companies and organizations are taking steps to make WASH facilities available. We have started giving required attention towards this arena. In the coming decade there are a lot of research possibilities and development opportunities in this sector.

8.0 References

- [1] https://www.stayfree.in/what-is-a-period-and-when-will-i-get-my-period?ds_rl=1285434&ds_rl=1285437&ds_rl=1285434&gclid=Cj0KCQiAyoECBhCTARIsA
- [2] <https://www.healthline.com/health/menstrual-problems>
- [3] <https://www.healthline.com/health/menstruation/pms-body-dysmorphia>
- [4] <https://www.iosrjournals.org/iosr-jnhs/papers/vol8-issue5/Series-7/A0805070107.pdf>
- [5] <https://www.nngroup.com/articles/triangulation-better-research-results-using-multiple-ux-methods/>
- [6] <https://uxdesign.cc/contextual-inquiry-a-primer-14e2e0696fb9>
- [7] <https://www.nngroup.com/articles/contextual-inquiry/>
- [8] <https://www.usability.gov/how-to-and-tools/methods/contextual-interview.html>
- [9] <https://www.usabilitybok.org/>
- [10]
- [11] J. Whiteside, J. Bennett, and K. Holtzblatt, "Usability Engineering: Our Experience and Evolution," Handbook of Human Computer Interaction, M. Helander (Ed.). New York: North Holland, 1988
- [12] *"SWOT Analysis: Discover New Opportunities, Manage and Eliminate Threats"*. www.mindtools.com. 2016. Retrieved 24 February 2018.
- [13] <https://my.clevelandclinic.org/health/treatments/15840-transcutaneous-electrical-nerve-stimulation-tens>
- [14] https://www.researchgate.net/profile/Seham-Abd-El-Hay/publication/279213361_effect_of_transcutaneous_electrical_nerve_stimulation_on_the_releif_of_dysmenorrheal_pain_among_students_of_applied_medical_science_college_at_hafer_Al-batin/links/5bfeb1b092851c63caae6c9c/effect-of-transcutaneous-electrical-nerve-stimulation-on-the-releif-of-dysmenorrheal-pain-among-students-of-applied-medical-science-college-at-hafer-Al-batin.pdf
- [15] https://www.researchgate.net/publication/258172758_Contemporary_Vibroacoustic_Therapy_Perspectives_on_Clinical_Practice_Research_and_Training
- [16] <https://www.medgadget.com/2012/05/study-shows-that-vibroacoustic-therapy-is-more-than-just-noise.html>
- [17] <https://www.bls.gov/ooh/healthcare/massage-therapists.htm>
- [18] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3093183/#:~:text=According%20to%20the%20findings%20of,in%20patients%20suffering%20from%20endometriosis.>
- [19] <https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/massage>
- [20] <https://bodyinmindinstitute.com/what-are-the-disadvantages-of-massage-therapy/>
- [21] <https://www.amcollege.edu/blog/massage-therapist-cons>
- [22] <https://www.medicalnewstoday.com/articles/deep-tissue-massage-benefits#benefits>
- [23] <https://www.healthshots.com/health-news/turns-out-covid-19-is-a-metabolic-disease-that-affects-multiple-organs/>
- [24] <https://www.hindawi.com/journals/ecam/2013/138537/>
- [25] <https://www.sciencedaily.com/releases/2018/04/180404114746.htm>
- [26] <https://islingtonacupuncture.com/acupuncture-for-period-pain/>

- [27] UNICEF Menstrual Hygiene Management Virtual, Co-Hosted By Columbia University and UNICEF.
- [28] WASH United Nations (2018). Let's talk about menstrual hygiene.
- [29] Seenivasan, P., Priya, K.C., Rajeswari, C., Akshaya, C.C., Sabharritha, G., Sowmya, K.R., Banu, S. (2016). Knowledge, attitude and practices related to menstruation among adolescent girls in Chennai. *J ClinSci Res*, 5:164-70. DOI: <http://dx.doi.org/10.15380/2277-5706.JCSR.15.031>.
- [30] Garg, R., Goyal, S., & Gupta, S. (2012). India moves towards menstrual hygiene: subsidized sanitary napkins for rural adolescent girls—issues and challenges. *Maternal and Child Health Journal*, 16(4), 767-774.
- [31] <https://guidegloves.com/en/knowledge/our-products/material>

-----X-----