

# A Study of impact of Sanitary Pad Disposal concerning a sustainable and Ecological packaging Solution

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Received: 13.10.2023

Revised: 19.11.2023

Accepted: 20.12.2023

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## ABSTRACT

Every woman goes through the menstruation cycle at some point in her life. So, it can be said that it is an ongoing trend where the majority of women use sanitary napkins. According to a survey, 64% (121 million) of the 336 million menstruation women in India use sanitary pads, which results in 1 billion pads being used each month. This means that 12 billion sanitary waste items are produced annually in India. This focuses on the problem of women's hygiene products using non-biodegradable raw materials, which is turning into a significant environmental problem. Sanitary pads are made of synthetic chemicals, glue, polyethylene, and other components that, if not disposed of properly, can create a hazardous environment. This paper focuses on the problems that arise when sanitary waste is not properly disposed of and how it affects the environment. The paper finishes with a product that, in order to facilitate disposal for women, includes a packaging solution within the sanitary pad itself. This environmentally friendly approach can therefore address a number of issues with segregation and, preferably, coverless sanitary waste disposal.

**Keywords:** Sanitary Pads, Waste pad Disposal, sustainable packaging, Eco-logical packaging.

## INTRODUCTION

### Sanitary Pads

A menstrual pad, or simply pad, is an absorbent device used by women throughout their menstrual cycle. Sanitary pads are a form of hygiene product that are worn externally, as opposed to tampons and menstrual cups, which are used inside the vagina. Sanitary pads can be constructed from a wide variety of materials, depending on the design, brand, and country of manufacture. Many of the sanitary pads that are sold on the market are disposable and only intended for one usage. The term "reusable pads" refers to fabric pads that may be used, cleaned, and reused repeatedly. (Jones, 2021) (5)

### Concept of Sustainable pads

In India, the usage of ecological or biodegradable sanitary napkins has recently increased significantly. In the recent years, several research have been conducted to create environmentally friendly, sanitary goods that not only minimize waste in the environment but are also thought to be skin and rash-friendly, as are typically generated by conventional pads. These eco-friendly pads are created from plant-based fibers including bamboo, cotton, and banana fibers. In the last several years, a lot of modern start-ups in India have introduced sustainable sanitary solutions. These environmentally friendly sanitary pads, which are chemical and plastic free, are more hygienic and comfortable to use than sanitary pads made of plastic. But the survey also reveals that many women are unaware of these marketable, sanitary items that are sustainable or are unaware of the damaging consequences that non-biodegradable products have on the environment. Therefore, there is a need to inform women about the damaging consequences that sanitary pads have on the environment. Additionally, the government can work with the companies making such eco-friendly items to increase the manufacturing of sustainable sanitary products. (Kapoor, 2021) (6)

### Indian Brands producing Sustainable Sanitary Pads with packaging

- 1) Azah- Ultra- soft Sanitary Pads

The Azah- Ultra- soft sanitary pads come in a variety of sizes and are made from organic cotton. To prevent allergies or infections, the wide surface area of these pads is coated with non-toxic, eco-friendly materials. These pads include absorbent layers that permit adequate air circulation and moisture evaporation in order to keep you healthy. To carry and dispose of used sanitary pads, each pad is supplied with its own disposal bag.

2) Pee-Safe Sanitary Pads

Pee-safe is a company that sells a range of sanitary items in addition to organic pads. The surface of these pads is composed of organic cotton, while the absorbent layer is made of bamboo fibre to avoid using toxic chemicals and plastic. These green pads are recognised for their natural anti-bacterial capabilities and also feature a separate packaging bag to dispose of the used pads. They are also leak-proof, chlorine and chemical fragrance-free, and leak-proof.

3) Sirona Sanitary Pads

The primary distinction between these bio-degradable sanitary pads and conventional white sanitary pads is that they are black. Natural resources including corn, sugarcane, cassava, and straw bale are used to make these pads. In addition to everything else, these pads are very absorbent, rash-free, anti-bacterial, and odour-controlling. Along with making these pads devoid of chemicals like chlorine and parabens, they also developed a thin sheet packing for waste pads.

4) Plush

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5) Carmesi Sanitary Pads

Since 2017, Carmesi Pads, one of the most popular items on the Indian market, has started making biodegradable pads. The first layer of the pads is made of maize starch since it comes into direct touch with the skin. The inner absorbent layer is composed of bamboo fibres, and the third layer is made of corn bio-plastic. These sanitary pads provide rash-free periods and have a unique disposal bag with each pad.

6) Anandi Sanitary Pads

One of the most reasonably priced sanitary pads in the category of hygienic goods is Anandi. These sanitary products are created from certified organic cotton that is fragrance-free, compostable, and biodegradable. Additionally, each single pad has distinct packing with which to dispose of the used pads.

According to the report, many Indian firms are working to develop ecologically friendly and conscientious measurement systems. While other sanitary pads with chemical infusions are more difficult to breakdown, period products made from natural materials are simpler to decompose early in the environment. Many Indian companies have developed incinerators that, when used, burn up the used pads, making it easy to dispose of the waste pads. However, not all places seem to employ them. Many women still choose to dispose of their used sanitary products in the conventional manner, either by wrapping them in newspaper or using the packaging that came with the particular brand of pads (not every pad comes with a packaging). It can occasionally be challenging to separate this dry trash since there are no markings on it to indicate what it is, even when these waste pads are disposed of wrapped in newspaper or even with the given packing. Every package that is disposed of is then opened by the staff, which can occasionally be dangerous because it includes period blood that can be toxic when directly contacted by anyone. Even if the package is misplaced occasionally, in such case it will still be thrown away after being wrapped in newspaper.

## Review of Literature

### Sanitary waste an increasing issue for rising pollution in India

This article describes the numerous ways that used sanitary pads are contributing to a rise in plastic pollution. According to a study, 12 billion sanitary pads are discarded annually in India, of which 28% are disposed of with regular trash, 28% are disposed of in the open, 28% are buried, and 28% are burned in the open. As a result, there are now more major pollution issues, including soil contamination, air pollution, and water pollution. Since it has been kept up there for generations, sanitary waste disposed of from homes and many other sources ends up in landfills, where it contributes to micro-plastic contamination. According to studies, plastic-based sanitary pads either never degrade and continue to contribute to soil or water contamination, or can take up to 250–800 years. Sometimes used pads that are not properly wrapped cause drain clogs and water pollution. As a result, this article draws

a conclusion on how much sanitary waste pollutes the environment.(Menstrual waste disposal adding to India's environmental crisis., 2021) (7)

### **Sanitary Hygiene practices followed by consumers in rural area**

Poor menstrual hygiene has not received enough attention in poor nations. The Indian government announced a new initiative in June 2010 to promote menstruation hygiene among rural teenage girls by offering them discounted sanitary products. However, there are other additional concerns that require simultaneous attention in order to promote menstruation hygiene, such as knowledge, the availability and quality of napkins, regular supply, privacy, and water supply, disposal of napkins, reproductive health education, and family support. The current article examines menstruation hygiene from a social and human rights perspective in addition to examining it from a health one. This paper discusses how healthcare professionals should take the initiative to disseminate such knowledge. Additionally, it is crucial for instructors to educate their pupils about reproductive health. Given the poor usage of sanitary napkins, women need to be made aware of how to use them. It is crucial to create long-lasting public health care programmes for women with the help of critical stakeholders including family members, teachers, the civic society, and healthcare professionals. (Rajesh Garg, Shobha Goyal, Sanjeev Gupta, 2011) (11)

Menstruation-related cultural practises, beliefs, and misconceptions exist in several areas of India, placing people at risk for genital tract infections. A cross-sectional research of girls in school was conducted to better understand the views, sources of knowledge, and status of menstrual hygiene. External genitalia were not sufficiently clean. In order to encourage safe and sanitary methods for protecting oneself against various illnesses, it is crucial to teach the girls about science and debunk their beliefs and prejudices. (Abhay Mudey, Gargi Mudey, Ramchandra Goyal, 2010) (1)

The research revealed that the MHM and sanitation value chains frequently overlook the disposal of menstrual waste, which results in incorrect disposal and adverse effects on users, the sanitation systems, and the environment. In order to provide health, safety, mobility, and dignity for women and girls, more study is needed to better understand MHM waste streams, disposal behaviours, absorbent materials, and waste management technology.(Myles Elledge,Arundati Muralidharan,Alison Parker,Kristin Ravndal,Mariam Siddiqui, Anju Toolaram, , 2018) (9)

Menstruation and menstruation habits continue to be subject to numerous social, cultural, and religious limitations, which is a significant obstacle to managing menstrual hygiene. Girls suffer significant difficulties and hurdles at home, in the classroom, and at work since they are not prepared for and aware of their periods in many sections of the country, particularly in rural ones. It's important to inform and educate people about the health risks and environmental degradation they pose. Utilizing contemporary methods like incineration can aid in waste reduction. Additionally, awareness should be raised to stress the use of natural or reusable sanitary goods manufactured from materials such as water hyacinth, sea sponges, banana fibre, bamboo fibre, and so on. (Rajanbir Kaur,Kanwaljit Kaur,Rajinder Kaur, 2018) (10)

Sanitary waste disposal is a major issue that requires immediate attention. In India, around 353 million women and teenage girls use sanitary products and produce menstrual waste each month, and this figure is rising daily. Why all the hubbub then? The proper disposal of sanitary waste is the issue. Unbelievably, during just her menstrual years, a single woman can produce up to 125 kilogrammes of non-biodegradable trash. (Bhatiya, 2017) (2)

### **Government Rules and Regulations for disposing waste pads**

According to a government document, according to the 2016 Solid Waste Management Rules, sanitary napkins and other menstruation garbage items fall under the category of Dry Municipal waste. Biodegradable, recyclable, and non-recyclable trash all fall under the category of dry waste. There are various concerns about classifying feminine hygiene items as plastic or biological waste. The garbage is first separated into biodegradable and non-biodegradable components at the collecting centre. The rag pickers painstakingly separate this material without any safety equipment, putting their lives at danger from deadly infections. However, the guideline advises wearing a suitable PPE gear when performing such job as used sanitary pads contain a significant quantity of waste blood that might come in touch with skin or any exposed body parts that are not adequately protected. In these situations, offering correct packaging could make it simpler to separate this hazardous material.(Menstruation Waste Hygiene , 2022) (8)

Rules have been established for both users and manufacturers of non-biodegradable items as of the 2016 Document of Waste Management Rules. It also implies that, in accordance with the obligations placed on waste generators under clause 4, consumers are required to dispose of their hygiene waste by

wrapping it in appropriate material, as directed by local authorities, or by wrapping it in packaging pouches provided by the brand itself, and tossing it in the trash can designated for dry waste or non-biodegradable waste. Similar to this, producers that make sanitary pads are required by regulation 17 to include a bag or wrapper to contain waste along with each pack of pads, or even to look into the potential of using recyclable materials to create hygiene items. The waste pads' given packages are still too fragile to hold waste inside of them, however this practise isn't as common as it should be. Because of this, even customers themselves will wrap used sanitary pads in newspapers or other difficult-to-separate materials. (Singh, 2016) (12)

### Objectives

Primary Objectives:

- To study the impact of sustainable and ecological packaging in sanitary pads.

Secondary Objectives:

- To find hazardous impacts of sanitary waste pads on environment.
- To find out awareness regarding sanitary waste dumping in urban areas.
- Conducting interviews, and evaluating about the packaging of waste pads by women using sanitary pads.
- To suggest a sustainable packaging solution in sanitary pads for ease of disposal. Comparative study done for existing packaging solution.

### Hypothesis

Sustainable packaging in sanitary pads can reduce the adverse impact on environment.

### Methodology

- Finding problems related to sanitary waste not dumped properly
  - 1) Data collection through Primary Sources.
  - 2) Data collection through Secondary Sources.
  - 3) Examine why proper dumping of sanitary waste pad is must.
- Study on need for packaging solution-
  - 1) How will it impact on environment when waste is dumped properly?
  - 2) Will the packaging solution be a boon for the workers?
- Solutions providing packaging into sanitary pads-
  - 1) Experimenting with the existing product to incorporate packaging into it.

Primary Research

- Interacting with PCMC officer Dr. Anil Roy of waste collecting department.
- Interviewing women using sanitary pads on, do they follow hygienic dumping practices

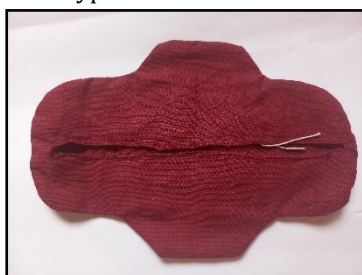
Secondary Research

- Data collected from Government articles related to sanitary hygiene in rural and urban areas and to review Rules and Regulations related to disposing to sanitary waste.
- Newspaper articles to know about initiatives of Government related to proper disposal of Waste pads.
- Reviewing previous Research Papers related to Sanitary Pads and its disposal.

Product Development from the above research is concluded as follows:

- Product Prototype-

Prototype 1-



Step 1- Back side of waste sanitary pad, which has infused packaging in it



Step 2- The packaging is pulled out with provided string.



Step 3- Once packaging is pulled out, turn it around waste sanitary



Step 4- Pull the thread, and tie the bag which has graphics on it to differentiate it as a waste sanitary bag.

### Prototype 2



Step 1- Back side of the waste sanitary pad, has sticky side and also extra packaging given with it, inside and outside both are sticky sides.



Step 2- Unfold the extra packaging provided, the waste pad will get covered in it which will have graphics on it.



Step 3- Once the waste pad is covered, the extra fabric as having sticky glue on it, just stick both the ends together and dispose it off.



Prototype 3-

Step 1- Waste sanitary pads without wings, backside has a pocket in which it has a thin packaging in it.



Step 2- Pull out the packaging from the pocket.



Step 3- Stick the waste pad together from back side, and open the packaging given with pad.



Step 4- Insert the waste pad in the packaging.



Step 5- Once inserted, stick the open side of packaging together and close it and it is ready to dispose.

- Packaging Materials that can be used –  
Plastics are considered one of the thinnest layers that can be used coated products. Now-a-days as technology is progressing, we have option of using bio-degradable plastics for covering products. With research and processes some of the below mentioned materials which are Eco plastics can be used as an option for packaging that is to be infused in product that is to be modified.

### 1. Seaweed Plastic



Seaweed packaging is made from a material called agar, which can be found in many types of seaweeds and algae. Agar is a gelatinous substance that is already used in the food industry as a thickening agent. Research has now extended its use to product packaging. Seaweed packaging is a particularly attractive and eco-friendly packaging option because seaweed is an abundant sustainable raw material. (Ho, 2020) (4)

### 2. Starch- Based Plastic



Starch-based plastics are made mainly from starch blended with thermoplastic polyesters to form biodegradable and compostable products. Composting bags with these plastics are used in selective collecting of organic waste. (Startch Based Bag) (13)

### 3. Bio-based Plastic



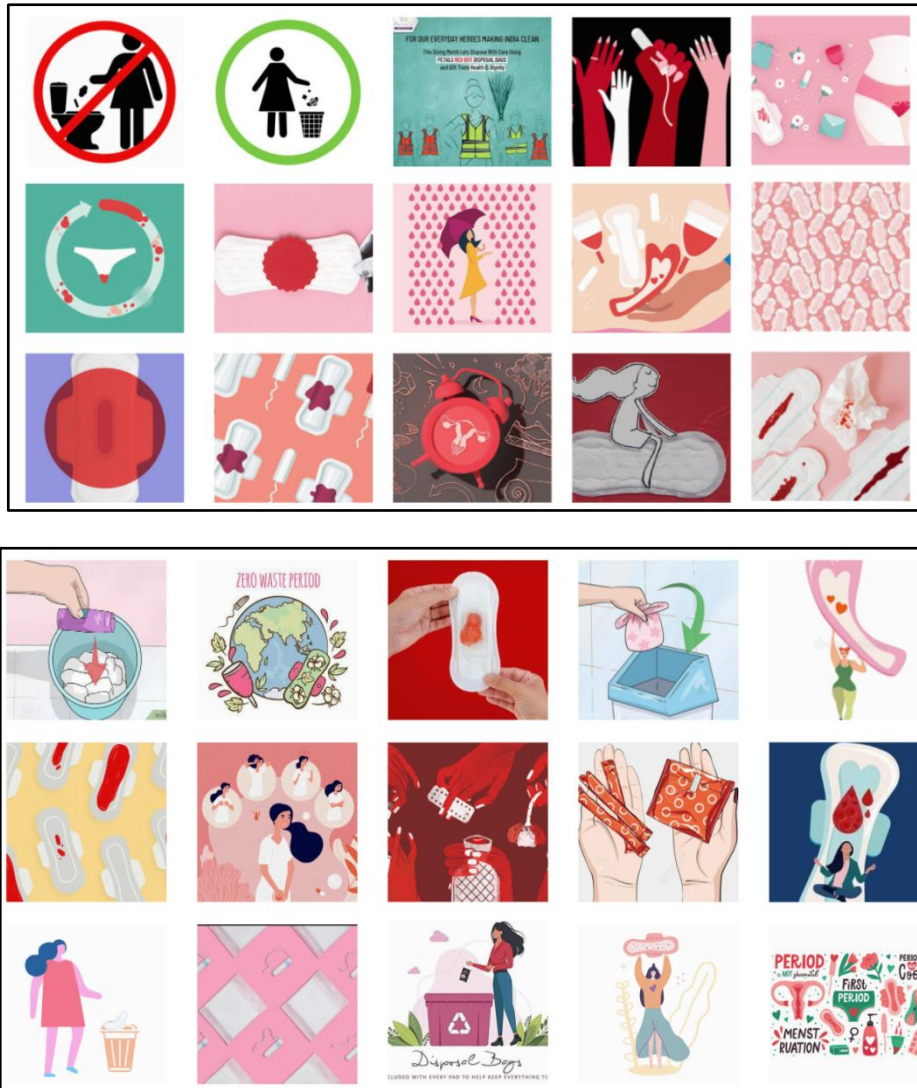
Bio-plastics can be made from proteins from different sources. For example, wheat gluten and casein show promising properties as a raw material for different biodegradable polymers. Additionally, soy protein is being considered as another source of bio- plastic. Soy proteins have been used in plastic production for over one hundred years. (Stefanie Putsch, Dean Weigand & Elena Bangel) (14)

### 4. Chicken Feathers Plastic



Studies have found that chicken feathers can be used to make biodegradable plastic. The feather-based plastic can be used to make everything from carry bags to containers and even furniture. Also, chicken feathers are available in abundance in several countries as they are often dumped as waste. (Halford, 2004 ) (3)

Graphics to be used on the outer packaging, so as to differentiate the sanitary waste



### Sample Type and sample size

Samples are restricted to the women from age group of 20-30 who generally use sanitary pads during their menstruation cycle. Women in and around urban areas of Pune city, are considered as samples for the research.

### Need and purpose of Study

Many times, it has been noted, sanitary waste is not properly disposed of, or even when it is, there is no signage or marking to identify it. As a result, when dangerous chemicals and even extra blood from the pad might transmit dangerous infections to others, numerous difficulties are created in the environment. It has also been noted that many women are unaware that sanitary waste belongs in the same category as dry waste and should only be disposed of with dry waste. As a result, when the waste is mixed, it is challenging to separate sanitary waste from wet waste, which prevents it from decomposing in the environment and instead continues to pollute it. The solution to this issue must start at the base, where the packaging may be infused into the pad itself and images can be added to help distinguish it from other trash so that it doesn't get mixed up with it. In addition, consumers find it simpler to use newspaper to wrap the used sanitary pad rather than the packaging that comes with the pad itself (not infused). However, while being dumped, it frequently leaves no marks and is tossed. Consumers will find it simpler to put garbage into an infused bag than into separate packaging, therefore this research or the created prototype can be highly advantageous. Therefore, the goal of the study is to lessen sanitary waste and the potentially detrimental effects improper disposal might have on the environment.



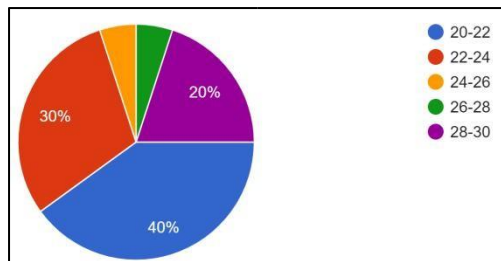
**Scope (Conceptual)**

1. Sanitary Pads (Bio-degradable/ non-biodegradable)
2. Sanitary Pads infused with Packaging
3. Packaging of Sanitary pads with Eco-logical solutions.

**Data Analysis**

**Q1. Age**

Age	20-22	22-24	24-26	26-28	28-30
Percentage of respondents	40%	30%	5%	5%	20%
Number of respondents	8	6	1	1	4



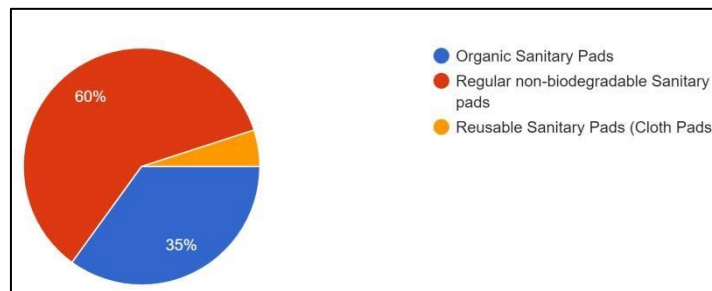
Data Table-1

Analysis - From the above data table, out of 20 respondents, 40% of them are in age group of 20-22, 30% fall under age group of 22-24, 5% are in the age group of 24-26.

**Q2. Which Sanitary pads do you prefer to use during menstruation cycle?**

Type of Sanitary Pad	Regular non-biodegradable Sanitary pads	Organic Sanitary Pads	Reusable Sanitary Pads (Cloth Pads)
Percentage of respondents	60%	35%	5%
Number of respondents	12	7	1

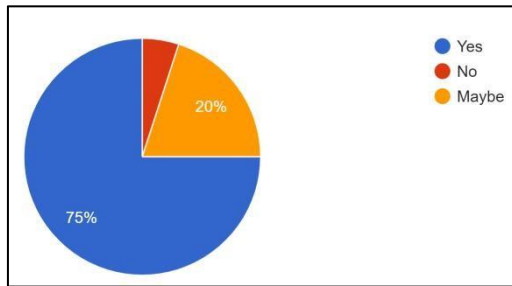
Data Table-2



Analysis - From the above data table, out of 20 respondents, 60% of them use Regular non-biodegradable sanitary pads during their menstruation cycle, 35% of respondents use Organic sanitary Pads, 5% of respondents use Reusable Sanitary Pads.

**Q3. Are you aware of the negative impacts of Regular non-biodegradable sanitary pads on environment as well as on the skin?**

Awareness of negative impacts of Regular Sanitary Pads	Yes	No	May Be
Percentage of respondents	75%	1%	20%
Number of respondents	15	1	4

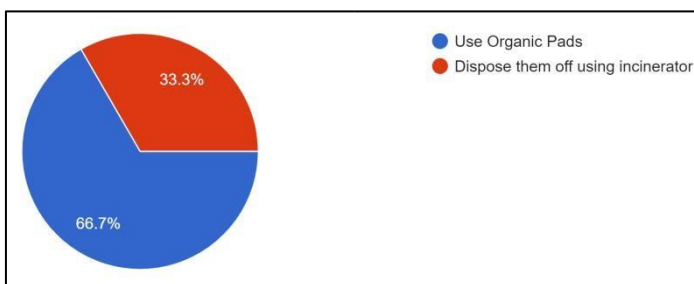


**Data Table-3**

Analysis- From the above data table, out of 20 respondents, 75% of respondents are aware of negative impacts of regular sanitary pads, 1% of respondents are not aware of the negative impacts, and 20% are not sure about it.

Q3a. If yes, what initiative do you take to make a chemical free environment?

Initiatives	Use Organic Pads	Dispose them off using incinerator
Percentage of respondents	66.7%	33.3%
Number of respondents	10	5

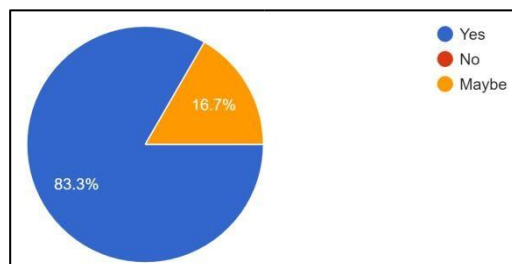


**Data Table-3a**

Analysis- From the above data table, to make chemical free environment 33.3% of respondents Dispose of their waste sanitary pads using incinerator, and 66.7% of respondents will use organic pads.

3b) if no, will you switch to usage of Eco-pads after receiving knowledge about it?

Switch to using Eco pads	Yes	No	Maybe
Percentage of respondents	83.3%	0%	16.7%
Number of respondents	10	0	2

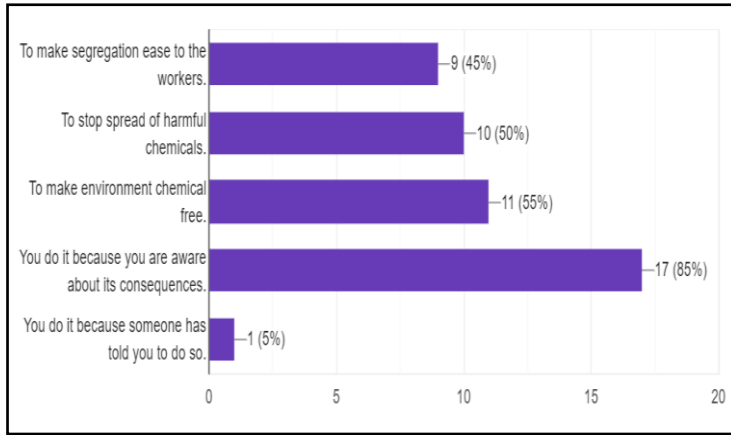


**Data Table-3b**

Analysis- From the above data table, 10 respondents responded to switch to Eco-pads and 16.7% are not sure to switch to usage of Eco-pads.

Q4. Why you feel it is necessary to dispose sanitary waste properly? (Choose all that are Applicable)

Necessity to dispose Sanitary waste properly.	To make Segregation ease to the workers.	To stop spread of harmful chemicals.	To make Environment chemical free.	You do it because you are aware about its consequence	You do it because someone has Told you to do so.
Percentage of respondents	45%	50%	55%	85%	5%
Number of respondents	9	10	11	17	1

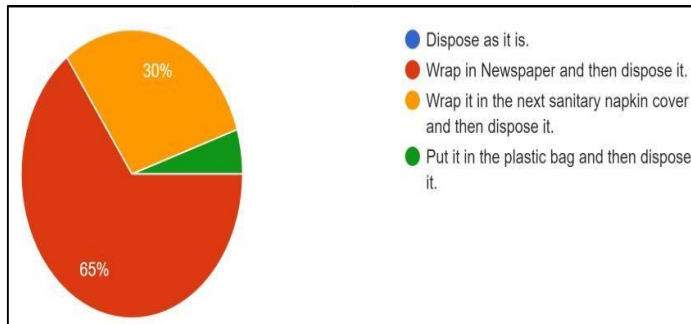


Data table-4

Analysis- From the above data table out of 20 respondents 45% of them feel to dispose sanitary waste properly so as to make segregation ease for the workers, 50% of them feel to stop spread of harmful chemicals it is necessary to dispose waste properly, 55% of them feel the need to keep environment chemical free by disposing sanitary waste properly, 85% of them dispose waste properly because they are aware of harmful consequence, 5% of them do because they are told to do so.

Q5. How do you wrap waste sanitary pads to dispose it?

Wrapping of Sanitary waste	Dispose as it is	Wrap in Newspaper and then dispose it	Wrap it in the next sanitary napkin cover and then dispose it.	Put it in the plastic bag and then dispose it
Percentage of respondents	0%	65%	30%	5%
Number of respondents	0	13	6	1

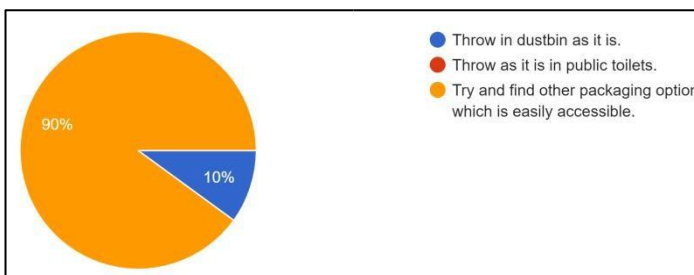


Data Table-5

Analysis- From the above data table, out of 20 respondents 65% of them dispose waste sanitary pads by wrapping it in newspaper, 30% of the respondents wrap the waste pads in next sanitary napkins cover and then dispose it, 5% of the respondents put the waste pads in plastic bag and then dispose it.

Q6. What steps do you follow if you don't have a proper packaging? (In case you lose the packaging you had with you)

Steps to follow when original packaging is lost.	Throw in dustbin as it is.	Throw as it is in public toilets.	Try and find other packaging option which is easily accessible.
Percentage of respondents	10%	0%	90%
Number of respondents	2	0	18

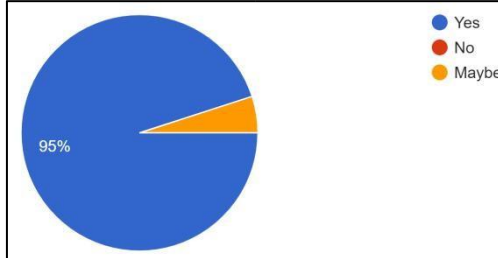


Data Table-6

Analysis- From the above data table, out of 20 respondents, 10% of them throw the sanitary pads as it is in the dustbin if proper packaging is lost, and 90% of the respondents try and find other packaging option which can be easily accessible to dispose the sanitary waste.

Q7. Do you think that sanitary making brands should provide packaging with the pad itself?

Sanitary pads brands should provide Packaging	Yes	No	May be
Percentage of respondents	95%	0%	5%
Number of respondents	19	0	1

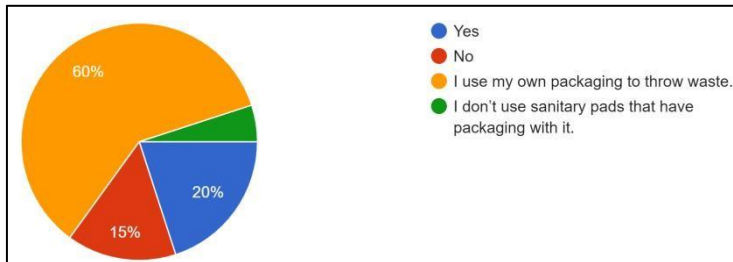


Data Table-7

Analysis- From the above data table, out of 20 respondents, 95% of them think that the brands producing sanitary pads should provide packaging with the pads itself, and 5% of the respondents are not sure.

Q8. Do you find easy to access, the packaging provided by the brands to dispose the waste?

Easy Access of the packaging provided by Brands itself	Yes	No	I use my own packaging to throw waste	I don't use sanitary pads that have packaging in it.
Percentage of respondents	20%	15%	60%	5%
Number of respondents	4	3	12	1

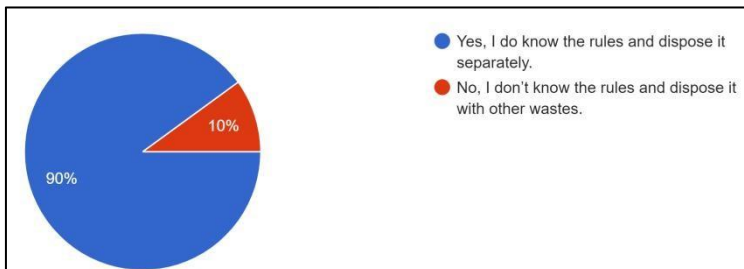


Data Table-8

Analysis- From the above data table, out of 20 respondents, 95% of them think that the brands producing sanitary pads should provide packaging with the pads itself, and 5% of the respondents are not sure.

Q9. Do you know that sanitary waste falls under Dry waste as per government rules, and so do you dispose it separately?

Knowledge of Government Rules	Yes, I do know the rules and dispose it separately	No, I don't know the rules and dispose it with other wastes
Percentage of respondents	90%	10%
Number of respondents	18	2



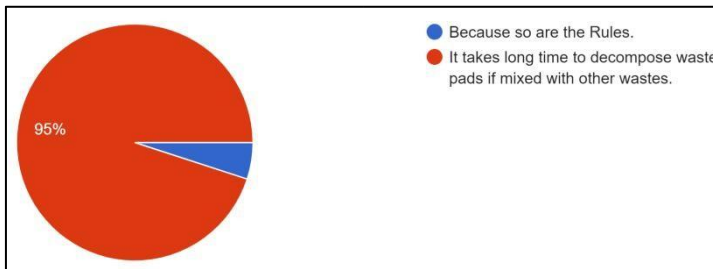
Data Table-9

Analysis- From the above data table, out of 20 respondents, 90% of them dispose sanitary waste separately as they know rules provided by Government, 10% don't know the rules and they dispose it with other wastes.

Q10. What do you think from below is important, to segregate sanitary waste properly?

Importance of segregation of Sanitary waste	Because so are the Rules	It takes long time to decompose waste pads if mixed with other wastes
Percentage of respondents	5%	95%

Number of respondents	1	19
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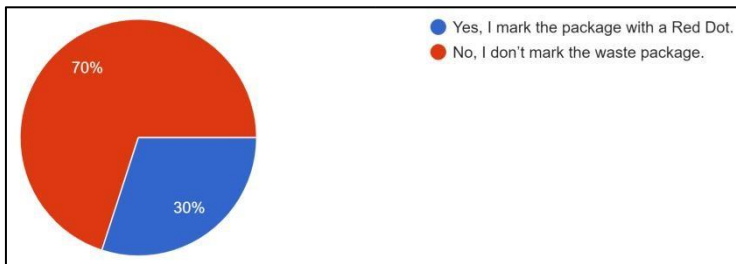


**Data Table-10**

Analysis- From the above data table, out of 20 respondents, 5% of them find important to segregate sanitary waste properly because so are the rules and 95% of the respondents know that it takes long time to decompose waste pads if mixed with other wastes.

Q11. To make sanitary waste segregation easy, do you leave any kind of mark when you throw the waste package?

Any mark is left on the waste sanitary pad pack	Yes, I mark the package with a Red Dot.	No, I don't mark the waste package
Percentage of respondents	30%	70%
Number of respondents	6	14

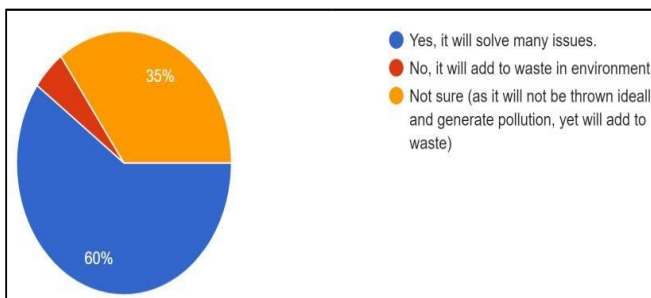


**Data Table-11**

Analysis- From the above data table, out of 20 respondents, 30% of them mark the waste package with a red dot for ease of segregation, 70% of the respondents do not mark the waste package.

Q12. Will a packaging solution provided infused in a sanitary pad itself, solve issues related to segregation and make packaging easier than traditional ways of packing it?

Packaging Solution infused in Sanitary Pad itself	Yes, it will solve many issues.	No, it will add to waste in environment.	Not sure (as it will not be thrown ideally and generate pollution, yet will add to waste)
Percentage of respondents	60%	5%	35%
Number of respondents	1	1	1



**Data Table-12**

Analysis- From the above data table, out of 20 respondents, 60% of them agree that a packaging infused Sanitary pad can solve many issues that the traditional ways of packaging, 5% of them responded that it will add to waste in environment if such packaging is provided and 35% of them are not sure as if the packaging infused pad is best or not.

**RESULTS AND DISCUSSIONS**

From the above study and with data collection it is concluded that, the basic motive of the research to make a product which is infused with packaging in it can solve issues and will also give an ease to the consumer's using sanitary pads. With this below are some mentioned discussions with consumers related to the prototype (Feedback and improvements) which can further be considered while making an actual product for the same.

Consumer1-

The product seems perfectly right on the packaging part. This solution can turn a help for the workers those who segregate the waste. Looking at the packaging it could be easily recognized that it is a sanitary

waste pad, and therefore the workers will not open the package which will avoid germs transferring to them. Not only for the segregation part, but also for us as we are the main consumer's it often happens that we cannot dump the sanitary waste always in the bags provided with the pad, ultimately we end up wrapping it in the newspaper and dumping it, but this product will definitely work for packaging part.

Consumer2 -

The prototype seem really working on the parts where these pads can be easily thrown with the help of the infused packaging into it. The actual ease will be experienced only after using the actual product, yet the prototypes seems good. Changes could be done in the sense of the materials used in the actual pad. Switching on to Eco materials could possible help and have one step ahead towards generating less hazardous waste. There could be a change in the product packaging, rather than a Potli bag it could just be a simple bag which has handles that could be tied.

Consumer3-

As a working women during my period days, I really want some pads which will have ease and comfort as I have to roam around, it often happens that because of it causes rash. So, as long as using a very thin material for packaging, the pad would feel the same comfort as normal. The packaging should never create a discomfort while using it. Other than that, the idea of packaging infused pad is fine for my side.

Consumer4-

For me this idea seems great with the prototype, it will have more effect when actual product is made, but yes for e as a college going girl, I have experienced that there used to be Waste sanitary pads been thrown ideally in the toilets, and the workers used to clean it and throw it in dustbin as it is. This solution of Sanitary pads infused with packaging can solve many such issues related to disposal of waste pads, it also happens with me that the paper gets ripped off and even the pads that I use have no packaging coming with it, so this idea can be accessible for me.

## CONCLUSION

Thus, the aforesaid study comes to a successful conclusion with a prototype of a sanitary pad that has packing. This prototype will aid in resolving the problems associated with packaging sanitary waste because the research has revealed some gaps and issues in this area. These issues include segregation issues, the improper disposal of waste pads, and environmental pollution caused by the hazardous chemicals they contain. The study reveals the importance of properly packaging sanitary waste, not only for environmental reasons but also because it has been noticed that many workers in the waste segregation department do not adhere to proper hygienic practises (such as not donning the appropriate PPE kits, gloves, or masks) to safeguard themselves from the dangerous chemicals found on the waste pads. When the garbage is being separated, the sanitary napkins that are thrown away are not identified as being waste pads by any sign. As a result, the workers open these packages without any protective gear, unaware that they are touching hazardous waste that can also expose them to serious illnesses. Not only will this product benefit those who use sanitary pads, but it will also aid in addressing the larger problem as the container will carry a mark or sign identifying it as a used sanitary pad.

## Limitations

1. Limitation as to sample size -  
The study is limited only with 20 respondents, who usually use sanitary pads/napkins during their mensuration cycle.
2. Limitation as to geographical area -  
The study is limited with the respondents specifically from in and around Pune region.
3. Limitation as to time -  
The data collected is limited between a time period from 1st of March 2022 to 1st April 2022.

## Future studies

- The study can be further conducted with a large number of samples for prototype testing and can also be conducted in major parts of India where sanitary pads usage is more.
- The product prototype which is made for the solution as to less the waste which is thrown around can be further developed by producing it into actual product by making Biodegradable sanitary pads infused with Packaging in it.
- Future studies can also be conducted with respect to how the waste segregating works will benefit with this Eco-packaging.
- Future studies can also be carried out on how non-biodegradable sanitary pads are harming the environment, and hence why is it necessary to dump the waste properly.

- Further studies can be conducted to know about hygienic practices to be followed by waste collecting workers from India.
- The studies can also be done to find more solutions on how sanitary waste can be reduced.

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