

Bio-Degradable and Reusable Sanitary Napkins: A Green Remedy for Period Care

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Abstract:- Periods, also known as menstruations, are regular vaginal bleeding that take place as part of a woman's monthly cycle. Women body gets ready for pregnancy each month. The uterus, also loses its lining if there is no pregnancy. Maintaining good menstrual hygiene and health will help us to avoid infections, lessen odours, and keep at ease when we are on our period. To absorb or collect blood during period, we can choose from a variety of menstruation goods, such as sanitary pads, tampons, menstrual cups, menstrual discs and period pants. Here aren't any official data, but according to a number of reports, India produces roughly 9000 tonnes of waste from menstruation on a monthly average, with the majority of it in the kind of feminine hygiene products. All of these sanitary pads made of plastic are either tossed in the trash or flushed down toilets with other garbage from the home. In India, numerous women use sanitary pads. The vast majority of the pads are made of plastic. Menstrual products, mostly sanitary napkins, are responsible for around 45% of the nation's overall sanitary waste generation, according to the Menstrual Health Alliance India. The objectives of this paper is to assess the knowledge, practice, attitude and perception regarding Biodegradable sanitary napkins among reproductive age group females and to assess the comparison between biodegradable sanitary napkins and reusable sanitary napkins.

Keywords:- Menstruation, Sanitary Napkins, Biodegradable.

I. INTRODUCTION

Adolescence is the time between childhood and adulthood and is marked by significant physical, psychological, and social changes. Menstruation, also known as having a menstrual period, begins with menarche and is a significant biological change that adolescent females must learn to maintain. (Yohannes Habtegiorgis, Tadesse Sisay, Helmut Kloos, Asmamaw Maled, Melaku Yalew, Mastewal Arefaynie, Yitayish Dامتie, Bereket Kefale)

At the reproductive age, menstruation is a physical phenomenon that is natural for females. Nonetheless, it is surrounded by superstitious beliefs and societal stigmas. Lack of awareness and understanding about menstruation might result in unsafe hygiene habits, which in turn raises the risk of genitourinary and reproductive tract infections, cervical cancer, school abandonment, low academic performance, and an all-around low level of life quality. (Zelalem Belayneh & Birhanie Mekuriaw)

Females those are menstruating require safe feminine items that allow women to go about their regular lives without experiencing physical restrictions. Many years back during the time of menstruation women were using natural items. But time by time these natural items were replaced by new materials. Several females who have periods choose to utilize sanitary pads all the way through their cycle in order to control the blood flow. Yet over the time, numerous studies have brought attention to the dangers of these sanitary napkins, warning that, these items are harmful for the body as well to the environment also.

Future generations' health will be impacted by the choices they make today on reproductive health. As these pads contain plastic material, Synthetic plastic components have been incorporated to these pads as a liquid absorbent for the best results. Another feature added to the various sanitary pads sold in shops is aroma, which gives the user a fresh feeling. There is now considerable fear that certain of these substances, which are found in sanitary napkins, may have negative health effects on customers.

Sanitary pads have experienced a number of improvements since their creation. The first material used for these pads were Flannel or woven cloth. After that cotton and gauze-based sanitary pads were introduced. For the good absorption capacity cellulose were also used. Further modification include the belt pad that was introduced first, then the beltless pad with adhesives quickly took its place.

Over the past twenty years, the market for sanitary pads in India has grown quickly. The quantity of sanitary pads supplied in India doubles every five years, with close to 1.25 billion pads sold in 2006. Sales of sanitary napkins increased in the nation to 5.12 billion pieces in 2016, and by 2021, they were projected to reach 10.31 billion. However

there is currently no information on the precise quantity of pads that will be supplied in 2021.

Menstrual cups and reusable pads made of cotton, which have little to no environmental impact, are popular among women. Many people now select 'biodegradable' sanitary napkins. However, there is still disagreement over how environmentally friendly these biodegradable napkins are.

However, because reusable products have a longer useful lifespan, we may be able to maximise the value of the emissions by using them for a longer time. We use fewer menstrual cups, reusable cloth pads, and period underwear, which reduces our garbage production, carbon dioxide emissions, and spending. Because they last longer than disposable sanitary napkins, reusable menstruation cups and cotton napkins reduce the amount of waste that these goods produce over time.

We also need to know that compost ability is not the same thing as biodegradability. All biodegradable materials are compostable, but not all biodegradable materials are compostable. Biodegradable materials dissolve naturally and eventually vanish entirely, but occasionally they can leave behind leftovers. Compost made from compostable waste, on the opposite hand, is nutrient-rich and good for plants.

Materials that can be burned are biodegradable and have the added advantage of doing so. In other words, as they rot, they release essential nutrients into the soil, promoting plant development. The majority of these 'biodegradable' pads make the promise to be compostable and chemical-free. Super-absorbent polymer (SAP) and wood pulp are often removed from biodegradable pads, but some plastic is kept for waterproofing.

There is one question that is if the biodegradable, organic-tagged pads have plastic inserts and bleached white cotton outer layers, how are they any better than disposable napkins. So here is the answer that these 'biodegradable' sanitary napkins are not totally compostable, it would not be inaccurate to claim. The findings imply that while these feminine hygiene products are not compostable, they may be biodegradable over time due to a little quantity of plastic covering. Whether they are actually sustainable and eco-friendly choices is still up for debate. The ingredients that go into making a serviette decide whether it is regular or green.

Because of its texture and look, non-woven polypropylene or perforated polyethylene used as the top layer is commonly mistaken for cotton. It cannot, however, be composted. Additionally, around twenty five to thirty percentage of the overall weight of a sanitary napkin is made up by the polyethylene back and top layers combined.

The barrier plastic layer, which is often employed underneath the top permeable layer, the super-absorbent polymer, and the hot-melt adhesive in sanitary pads are all frequently made of non-compostable materials. The remaining parts need to be changed, with the exception of

the adhesive, which is used sparingly. Therefore, it is necessary to incorporate extended producer responsibility into the system. The trash produced by sanitary product manufacturers has to be held accountable. The napkins should be ISO 17088:2021-certified by government-authorized testing facilities, which explains the steps and requirements for identifying and marking items made of plastics acceptable for aerobic composting. ISO 17088:2021 specifies the methods and requirements for testing facilities. Consumers must be aware of the products they are buying.

Decomposition of a biodegradable pad typically takes ninety to one eighty days. Within the allotted time, compostable napkins can breakdown in the soil without harming the environment. Normally, fully compostable sanitary pads are confused with biodegradable or oxo-degradable sanitary pads. The negative perception and lack of understanding of sanitary waste disposal are both a result of a lack of education at all levels. The science underlying them and their disposal is frequently unknown to the administration.

Information, communication, and education (IEC) and capacity building to spread awareness of more ecologically friendly products and methods of disposal should be among our long-term goals in India.

➤ *Research Problem Statement*

The present review was aimed to gain a comprehensive understanding of the knowledge, practice and attitude or perception regarding bio-degradable sanitary napkins. The narrative review had been divided into four sections. Each section examined several related studies. These sections are:

- First section deals with the knowledge regarding Biodegradable sanitary napkins among reproductive age group females.
- Second section deals with the practice regarding Biodegradable sanitary napkins among reproductive age group females.
- Third section deals with the attitude and perception regarding bio-degradable sanitary napkins among reproductive age group females.
- Fourth section deals with the comparison between bio-degradable sanitary napkins and reusable sanitary napkins.

➤ *Objectives*

- To assess the knowledge regarding Biodegradable sanitary napkins among reproductive age group females.
- To assess the practices regarding Biodegradable sanitary napkins among reproductive age group females.
- To assess the attitude and perception regarding Biodegradable sanitary napkins among reproductive age group females.
- To assess the comparison between biodegradable sanitary napkins and reusable sanitary napkins.

II. METHODS

A narrative review was designed. A systematic electronic search was used to identify relevant studies. Only original research paper were used in the study. The electronic databases searched were: Research gate, PubMed, Scopus, Google scholar and Allied Health Literature (CINHAL).

The existing literatures were very systematically opted to recruit into this narrative review.

➤ Inclusion Criteria

- Original research papers related to the topic.
- The document which is available in full text and is widely accessible online.
- Studies that are presented in English.
- Research studies published from the year 2017 onwards.

➤ Exclusion Criteria

- Poor quality journal articles.
- A research articles without having ISSN number.
- Research studies that are not listed in a journal data base.
- Research studies for which there is an abstract accessible.

➤ Outcome

Knowledge regarding bio-degradable sanitary napkins

- Namrita Rai, Faine Crimbly, Summaya Aftab, Aleena Baig, Nathaline Fernandes, Syed Uzair Mahmood conducted a cross sectional study on An assessment of knowledge and practices relating to the usage of sanitary pads in march 2019. 391 ladies were chosen by a convenience sample method. Structured formed questionnaires were used for collection of data. The participants in this study were 391 girls from the city, with ages ranging from 15 to 45. 95.7% of these respondents' favoured menstrual pads over to toilet paper, cloth, tampons, and menstrual cups. According to common perception among females who use menstrual pads, failure to change pads frequently while bleeding may raise the likelihood of developing infections (p 0.01). The results revealed that several females are conscious about the dangers of using menstrual pads and are well informed on how to utilize them. Also, the research found no evidence of a major risk of negative effects related to the usage of menstrual pads.
- Rahul Vinod Nair and Rachana RK Nair College of Agriculture, Parul University, Vadodara conducted study on sanitary pads from banana pseudo stem waste in feb 2021. Banana fibre is typically extracted from the tree's pseudo-stem. Following extraction, the fibres then divided into tiny pieces and boiling for one hour in one fifty milliliters of distilled water and five grammes of sodium hydroxide. The liquid is then given time to cool

for roughly 1.5 hours to create an extremely thin sheet. The muslin fabric was utilized to wrap the organic cotton after it was spread out on the thin banana sheet. The entire package of sheets are coated in the softened canvas fabric, and either a heat source is used to help the canvas cloth corner attach to the pad, or the edge of the pad can be sewn. Sanitary pads have a multi-layered composition, and every surface should serve a particular purpose. Materials included banana fibre, organic cotton, muslin fabric, and canvas fabric. Banana fibre is a material that occurs naturally which is totally biodegradable, safe for both people and the environment. Because to its non-aggravating, tissue-friendly, and basic fluid control features, organic cotton has become one of the widely accepted building ingredients in pads for the top layer. Recent years have seen an increase in the use of biological resources to address global issues. This study shown that it is both economical and environmentally friendly to manufacture sanitary feminine items using biodegradable materials though rather than non-biodegradable ones.

- Md. Moynul Hassan Shibly, Mohammad Anower Hossain, M. Forhad Hossain (2021) has conducted a study titled “ A development of biopolymer-based menstrual pad and quality analysis against commercial merchandise” with objective to substitute SAP with ecologically friendly biopolymer and supply village poor women competent performance and characteristics, design a sanitary and biodegradable pads. For such experimental study, the authors decided tissue paper, viscose fibre, and hundred percentage cotton as the base material. Commercial-grade sodium alginate and CMC were employed in substitution of SAP to manufacture sanitary napkin sample and with no modification. Neem extracted was used on non-woven cloths utilizing reagent grade citric acid at Merck, India, as a glue. Throughout this study, fresh green neem leaves from neem trees cultivated in Bangladesh were utilized to manufacture an extracted solution which was employed to first handle manufactured non-woven fabrics. As per the report's findings, neem extract is known to cure the non-woven fabric that offers the pads its bactericidal functionality even while promoting its softness and user-friendliness. Increased performance can be observed in nonwoven textiles processed with fifty percentage neem, as well as all samples of sanitary napkin pads being manufactured to use these textiles.
- Christopher Chakwana¹, Londiwe Nkiwane et al (2014) carried out study with tittle”Development of a Low Cost Re-usable Microfibre Sanitary Pad” and objective of the study was to Construct a biodegradable microfibre sanitary pad. To test for determination and resistance to wicking, researcher performed wicking procedures. The vertical strip experimentation will assess the pad's ability to soak up fluids. The Ugandan Standard Tests for Sanitary Towels Document's EAS 96:2008-Annex C was followed when conducting absorbency trials. Such techniques relied on weighing alterations in the pad that used a balance to compute the quantity of fluid that had absorbed. The vertical wicking test was performed as part of the study reported that the all three pads in all

five depths demonstrated comparable wicking, with the Micro-fibre pad indicating a higher percentage of wicking than the available commercially sanitary pads. A polyethylene material had been examined to determine whether it could prevent blood from seeping through in order to prevent blood leaks. A polyethylene material's capacity to inhibit blood from seeping has been examined in an attempt to avoid bleeding leakage. The polyethylene covering proved to be an effective fluid proof layer, according to the findings concluded from the research the majority of the ingredients for the fibre pads can be purchased locally, enabling it simple for a village woman to knit them together.

- Jyoti Choudhary, Dr Mahua Bhattacharjee, has conducted a study on Consumption Pattern of Sanitary Napkin and Environment Degradation. The research paper high spots the issue of women hygiene products that are becoming a serious environmental issue due to the non-biodegradable raw materials. In the manufacturing of most sanitary pads raw materials like wood pulp, polyethylene etc. are used consisting high carbon footprints poisoning habitat. Some firms use alternative absorbent fibres like bamboo, jute, banana fibre having lower level of carbon footprints. The findings of the paper have been based on a secondary comparative study of firms which produce eco-friendly sanitary napkins with those that use non-biodegradable raw materials. It has been found that the firms using eco-friendly raw materials cause a positive externality, whereas the latter cause a negative external effect. Study concluded that sixty one percentage of women's population are aware of negative impact of synthetic sanitary napkins on environment. Only thirty two of women are aware of organic sanitary napkins and twenty eight of women find it easy to purchase them. Moreover, sanitary napkins are dumped un-hygienically, ninety nine percentage of women throws sanitary pads in open by wrapping it and dumping in household garbage. The research paper concludes that according to the women preference in feminine hygiene products the sanitary napkin market fails as women preference is synthetic sanitary pads due to its low cost but such pads degrade environment and are non-decomposable.
- Dr. Mekala M1, Sri Ramakrishna has conducted a study titled "Development of Eco-Friendly Sanitary Napkins using Sansevieria trifasciata Fibres coated with Rosa damascena Extracts". The present paper highlights the issue of non-biodegradability of commercial sanitary pads and importance of using Sansevieria trifasciata plant fibres as biodegradable and eco-friendly absorbent core in sanitary napkin. Commercial pads are non-biodegradable causing accumulation of menstrual waste and degradation of environment. A study estimated that on an average three thirty five million menstruating women dispose four thirty two million pads every month. These sanitary pads are non-biodegradable and remain in the landfills for about eight hundred years. Wood pulp is the major raw material which is used as absorbent core in feminine hygienic product. But over usage of these natural resources will lead to deforestation. Chemicals in commercial sanitary napkins

have an impact on women's health. Agricultural and plant-based fibres are the greatest substitute for these synthetic materials since they are widely available, non-toxic, environmentally benign, and biodegradable. The goal of the project is to develop sanitary napkins with antimicrobial finishes by conducting preliminary tests on plant fibres from *Sansevieria trifasciata*. To improve the fibres' ability to absorb moisture, *Sansevieria trifasciata* leaves were pre-treated with scouring and bleaching before being used to make fibres. To give fibres an antibacterial effect, *Rosa damascena* extract was microencapsulated. The current study finds that *Sansevieria trifasciata* fibres microencapsulated have antibacterial capabilities against a variety of pathogens, including *Escherichia coli*, *Pseudomonas sp.*, and *Candida*. Thus *Sansevieria trifasciata* plant fibers could be an ideal substitute for absorbent core used in sanitary pads.

III. PRACTICE REGARDING BIO-DEGRADABLE SANITARY NAPKINS

- Krishnashree achuthan, Sharanya Muthupalani, and Aswathy Sreedevi in 2021 has conducted a study on 'A novel banana fiber pad for menstrual hygiene in India: a feasibility and acceptability study. One fifty five participants from the rural and two hundred sixteen from the urban regions engaged in the quantitative investigation of feasibility and acceptability of the banana fiber based menstrual pads. We took into account research subjects who had taken banana fiber based menstrual pads for longer than four months in order to increase the validity of the FA study. The data has been collected from the respondents of various states like Bihar, Delhi, Karnataka, Kerala, Maharashtra, Tamil Nadu and West Bengal. Exploratory factor analysis and a Cronback's reliability test were used to construct and evaluate a twenty two-item as a survey tool. The findings showed that both respondents groups found BFPs to be highly feasible and acceptable. The findings showed that there is high feasibility and acceptability rate of BFPs in both groups of respondents that is rural (eighty two percentage), urban (eighty percentage) feasibility rate and rural eighty percentage, urban seventy eight percentage acceptability rate. Key banana fiber based menstrual pads qualities including leakage and comfort were compared to the respondents' earlier practises, and the results showed that respondents were overall satisfied with the outcomes of BFPs and would suggest them to others.
- Jasmin Foster, Paul Montgomery conducted a study with title "A Study of Environmentally Friendly Menstrual Absorbents in the Context of Social Change for Adolescent Girls in Low- and Middle-Income Countries". In order to determine every material's unique absorption rate, the investigators used four distinct types of natural biodegradable material: (a) hundred percentage cotton terry cloth, (b) hundred percentage hemp cloth, (c) hundred percentage bamboo wadding, and (d) hundred percentage linen. To make the study's results highly authentic, a gelatine solution was applied

to mimic the thickness of menstrual blood. Then, ten g of gelatine being poured to three hundred ml of water that was then warmed to sixty °C while still being stirred when it is no further observable gelatine particles remained. Afterwards, fifteen to twenty ml. quantities of the liquid were divided up for every cloth. After that, a reliable analytical tool was utilized to weight each of the test cloths. According to the study's findings, bamboo wadding has a better adsorption index (7.86) than cotton terry cloth (0.84), hemp cloth (1.4), linen (1.57), and commercial sanitary pads (0.84), amongst many other materials (4.38). Despite the bamboo wadding's has high absorbency index. The study's findings revealed that the gelatine mixture was employed to analyze a variety of biodegradable materials' absorbency rates and correlate them to commercial sanitary pads. Comparing bamboo wadding to hemp fabric, linen, and cotton terry cloth, it was found that bamboo proved to be the most absorbent natural material.

- Afi Agbaku Alimatu Sadia Yahaya, Feng Junhua, Shi Chengqi, Wangkung Linda has conducted a research study titles "Jute Plant- A Bio-Degradable Material in Making Sanitary Pad for Sustainable Development Comfort". The study intends to shed light on the usage of the Jute Plant in place of the chlorine-bleached wood pulp or cotton and packaging, achieving Environmental Sustainability by improving access to economical, biodegradable, and healthful sanitary napkins. The research was developed based on the findings of a survey of women (both employees and students) and secondary data gathered from studies, articles on female hygiene, Sustainable development targets, and the Research Institute on Jute Plant. Many women are willing to switch their sanitary napkins for more affordable and biodegradable ones, and the jute plant can be used to replace the non-biodegradable materials used in creating them. Providing a platform so that women can obtain affordable sanitary products while also protecting the environment. By restoring the environment to its initial condition after use, one can support sustainable development. A quick survey was conducted to learn more about how often women use sanitary products, other aspects of female hygiene, and the environmental impact of sanitary napkin disposal. This study, which focused on gathering information on the types of sanitary napkins women used and whether they would choose one that was healthy, environmentally friendly, and economically advantageous over a more traditional option, used an online survey form provided by esurveycreator.com to collect the necessary data. This was mostly done to get a broad overview of some of the problems women run into during their periods and some of the methods they employ to deal with those problems. Of the hundred participants the link was shared with, sixty participated and provided a total of nine hundred eighty eight answers to the twelve questions that were posed.
- Priya Petchimuthu, Ramya Petchimuthu, Sarah Afreen Basha, Ramya Krishnaveni Murugan, Harshi Sundara Ganapathy, Uma Maheshwari Durairaj has conducted a study on "Production of Cost Effective, Biodegradable,

Disposable Feminine Sanitary Napkins using Banana Fibres" Sanitary napkins are used by women for protection during their periods all around the world. Only a small portion of women in India use sanitary napkins. The fundamental explanation for such a low number has to do with peoples' ability to pay. The current generation of sanitary napkins are non-biodegradable and dangerously infectious, which has an impact on women's health. Sanitary bio napkins are created from natural materials to get over this problem. Banana fibre and cotton, which are readily available, bio-degradable, and inexpensive materials, were used in the current investigation. Using natural materials had the added benefit of being more porous and retaining fluid for a longer period of time. The findings showed that the napkins are environmentally friendly and have no harmful impacts on women.

IV. COMPARISON BETWEEN BIO-DEGRADABLE AND REUSABLE SANITARY NAPKINS

- **Mehta Sumita, Grover Anshul, Mittal Nalini, Nanda Pratibha, Khatuja Ritu, Naseem Azra** has conducted a research study titles "Reusable sanitary napkins-time to revisit". The main objectives of this study was to assess knowledge, attitude and practices (KAP) of women regarding menstrual hygiene and to evaluate the use of reusable sanitary napkins as an alternative to disposable sanitary napkins. The study has been done in 2 phases. Fifty married women who were presenting to the gynaecology OPD in the first part of the study were instructed to use reusable sanitary napkins for two months. To exclude genital infection, vaginal swabs were tested before and after use. Reusable sanitary napkins were found to be satisfactory and the trial was expanded in the second phase to include an additional 534 women. For all women, a KAP analysis of menstrual hygiene was conducted. After two months of use, phase 1 of the study's microbiological analysis found no pathogenic organisms on vaginal swab culture. Only 26% of the 584 women analysed by KAP were aware of menstruation before menarche, and their mothers were the main information source for 51.88% of them. In the survey, 76.54% of the women used disposable sanitary napkins, with 15% of them being disposed of in an unclean manner. Of the 80.49% women who used the reusable napkins, 83.6% said they would recommend them to others. An efficient, cost-efficient, and environmentally responsible replacement for throwaway napkins are reusable sanitary pads.
- **Sassone Samantha Ciardi, Silva Susan, Metzger Jed, Fisher Nevan, Ambily Mohan, Irene Felsman** has conducted a research study on titled Reusable sanitary napkins in rural India: a remote quality improvement project for adolescent girls promoting menstrual hygiene health during the COVID-19 pandemic. In this experiment, 50 teenage girls from rural Tamil Nadu, India, had pre- and post-intervention assessments of their menstrual knowledge, usage of reusable feminine hygiene items, the number of days at school skipped

because of periods, thereby menstrual practises, and needs. The intervention involved the provision of MHM kits to all participants as well as an MHM teaching programme on feminine hygiene care. Over the course of 120 days, the intervention was carried out in two phases. Phase 1 was a 30-day period (4 December 2020–3 January 2021) during which 50 adolescent girls were recruited, pre-intervention evaluations were finished, and the MHM intervention was implemented. These same teenagers participated in Phase 2 during a 90-day period, using the items in the MHM kit and completing the post-intervention assessment at the conclusion of the phase. Participants were teenage girls (aged 10 to 19) who had experienced menarche and resided in Trichy or Tiruvannamalai, rural towns in Tamil Nadu, India. A demographic survey was administered to participants before and after the intervention. It asked about current age, age at which menstruation began, attendance at school, religious affiliation, access to flowing water at home and at school, and existing methods for controlling monthly periods. Adolescent characteristics, intervention results, and intervention fidelity results were described using descriptive statistics. The findings of this study show a significant correlation between MHM awareness and the utilisation of reusable feminine hygiene products, leading to an improvement in menstrual management skills and a reduction in absenteeism from school.

- Hennegan Julie, Dolan Catherine, Wu Maryalice, Scott Linda, Montgomery Paul has done a Cross-sectional study titled “Schoolgirls' experience and appraisal of menstrual absorbents in rural Uganda: a cross-sectional evaluation of reusable sanitary pads”. The study's goals were to assess the girls' perceptions of the dependability and acceptability of various menstrual absorbents as well as their experiences using them. Second, to analyse variations in expressed liberty in activities during periods according to menstruation absorbent and compare evaluations of freely offered pads that are reusable to other current methods of menstruation management. 205 menstruation schoolgirls from eight rural Ugandan schools participated. The use of reusable pads provided by the intervention by 72 girls were compared to the use of pre-existing improvised methods (mostly new or used fabric). The ratings of perceived absorbent reliability across activities, ease of changing absorbents, and disgust with cleaning absorbents were all significantly higher among schoolgirls who used reusable pads. There were no appreciable changes in the reporting of scent or outer garment soiling during the most recent cycle of menses. There were no differences between girls who used reusable pads and those who used other methods when asked if menstruation made them skip daily activities. However, when asked which tasks they avoided when they were menstruating, women who used reusable pads reported doing less exercise, working in the garden, getting water, and cooking. The study's finding was that reusable pads were viewed favourably. Although there were no differences in the reports of actual soiling and missed activities because of periods,

this had some positive effects on self-reported involvement in daily activities.

- Ramsay Caitlin, Hennegan Julie, Caitlin H Douglass, Eddy Sarah, Head Alexandra, Lim S C Megan has conducted a study titled “Reusable period products: use and perceptions among young people in Victoria, Australia”. Young people (aged 15–29) in Victoria, Australia, were the subjects of a yearly cross-sectional survey that collected both quantitative and open-text qualitative data. Through carefully chosen social media adverts, the convenience sample was gathered. We surveyed young people (n = 596) who reported menstruation within the previous six months to learn about their use of reusable materials, menstrual product usage, and product priorities and preferences. According to the study's findings, 37% of participants used reusable products during their most recent menstrual cycle (24% used period knickers, 17% used menstrual cups and 5% used reusable pads), while a further 11% had attempted to use reusable products in the past. Use of reusable products was linked to older age, Australian birthplace, and higher discretionary income. The need for early and better information, difficulties managing upfront costs and availability of re-usable, good experiences with reusables, and difficulties using reusables, such as washing reusables and changing them outside the home, were all mentioned by respondents. According to the study's findings, many young people use recyclable goods, with environmental concerns serving as a key motivator.

V. CONCLUSION

After studying in-depth about each and every research articles regarding knowledge, practice and attitude or perception regarding bio-degradable sanitary napkins among reproductive age group females we found that we can't say there is no knowledge about bio-degradable sanitary napkins as in some of the studies we found average or good knowledge about it. They are also aware about organic sanitary napkins. But in most of the studies we found that less education hinders the level of knowledge and people are throwing this sanitary napkin in open area and dumping in household garbage. Females are also having knowledge about negative impact of synthetic sanitary napkins on health and on environment. It won't be wrong to say that menstrual hygiene products are necessity for women and they must be aware of such products available in the market for their own health but we can't deny the fact that these products are harmful for the environment. After studying the Act initiated by Indian Government it is concluded that there is lack of attention paid in this matter as menstrual waste is treated as household waste under Municipal Solid Waste according to Consumption Pattern of Sanitary Napkin and Environment Degradation.

Due to various awareness programs and steps taken by Government there is widespread use of sanitary napkins in urban area as well as the small set up of firms of sanitary napkin in rural area has increased its demand which has increased the burden of menstrual waste growing every day.

It's high time that the awareness programme must be directed in the right path where people gets pure knowledge of merits and demerits of highly preferred synthetic sanitary pads. There should be a balance between home and environment as both health of women and environment are equally important. Moreover, on the part of government, there must be support given to the new techniques producing organic sanitary pads which are biodegradable like Saathi, heyday etc. and some restriction must be out on use of synthetic sanitary pads. Secondly, Government must segregate menstrual waste from household waste and decompose them with different techniques and method instead of burring them in landfills. Either they must be included under bio-chemical waste or separate category must be formed under Consumption Pattern of Sanitary Napkin and Environment Degradation.

➤ *Scope for Further Research*

- Appropriate period care knowledge should be included in adolescence schooling and activists ought to promote knowledge of how toilet amenities may influence the selection of products.
- Researchers can develop a sustainable way of enhancing the world for the next generation by using natural materials in pads that are affordable to those with lesser incomes.
- Structured teaching programme for females to motivate them for the use bio-degradable sanitary napkins.

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