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RESEARCH ARTICLE

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STUDY ON WASTE SEGREGATION AND ITS IMPACT ON ENVIRONMENT

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ABSTRACT

This study was conducted to determine whether or not people segregate waste and, if so, into how many categories, whether or not they use proper disposal methods when disposing sanitary waste, how often they clean their dustbins, and whether or not they have encountered difficulties finding newspapers to dispose sanitary waste in public places. Sanitary waste is the disposal of menstrual items such as sanitary pads, tampons, and other menstrual goods. The primary goal and objective of our study was to determine if individuals are aware of the significance of garbage and sanitary waste segregation. Determine the obstacles people have while disposing of sanitary waste. It is necessary to separate sanitary trash since it is biohazardous waste and to dispose of it properly because it is extremely unclean and might transmit germs. We prepared a questionnaire and 52 persons participated in answering the questionnaire. Following a comprehensive examination and interpretation of this questionnaire, we discovered that many individuals lack knowledge regarding sanitary waste segregation and have difficulty disposing of sanitary waste.

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INTRODUCTION

The most significant aspect of our lives is the Garbage Can. Eugène Poubelle designed it to enhance cleanliness, odour, and more. Prior to the invention of cans and bins, trash was discarded on the street, buried in holes, and even poured into bodies of water. Dustbins are efficiently positioned around a building to decrease pollution, and the market need for sanitary dustbins will be in work space washrooms and school/college washrooms where women lack the ability to dispose of sanitary waste correctly. Due to illiteracy, this is still a major issue in our nation, but many are uncomfortable discussing it in public. In India, 71% of teenage girls are unaware of menstruation until they experience it firsthand, causing unnecessary worry and anxiety. In 2018, India eliminated a 12% tax on sanitary items, making access to sanitary napkins a big concern. Dustbins serve an essential function in every home and workplace, and the market for them is enormous. Minimalist and kitchen garbage cans are being created to reduce waste and promote recycling. The market need sanitary garbage cans to avoid the commingling of solid and menstrual waste. Sanitary waste is a significant source to air, water, and land pollution and must be disposed of securely and separated from solid wastes. No acceptable scientific approach exists for removing sanitary waste and transitioning it into non-biohazardous waste.

Objectives of the Study

1. This study tells us about the current methods and strategies used in waste management.
2. The study seeks to examine the extent, range and method by which the other global countries get rid of their wastes.
3. The study investigates the present condition of the country's sanitary waste management systems.
4. We get to know about many methods and techniques by which waste gets disposed of.
5. This study helps in encouraging people to wisely manage the waste and also spread awareness among the public.

Waste Generation and Segregation in India: Waste management requires a succession of coordinated actions, such as sorting, collecting, transporting, recycling, and disposal. The Union Ministry of Environment, Forests, and Climate Change is responsible for the management and control of rubbish in India. Municipal waste is at the top of the waste hierarchy, followed by hazardous waste and finally industrial garbage (MSW). To prevent environmental damage, laws controlling landfills should be strict. Waste recovery and recycling must be a vital element of any waste management plan in order to avoid landfills from becoming congested. In light of the increase of

electronic and plastic waste, recovery initiatives that adhere to the 3Rs of waste management — reduce, reuse, and recycle — are imperative. India has begun the Swachh Bharat Mission, a five-year initiative to enhance the cleanliness of the country's urban and rural regions. The Indian government has set a variety of policies and standards for managing the several types of trash generated in the country. There are eight separate waste types, each of which requires unique care. Some plastics are gathered by authorised rag-pickers or waste collectors from municipal rubbish. The plastic waste is subsequently disposed of in accordance with the Plastic Waste Management (Amendment) Rules of 2018. As it accumulates in the environment, non-biodegradable plastic waste presents a hazard to all kinds of life. Lead, cadmium, beryllium, and chromium may be found in abandoned electrical and electronic equipment, such as computers and their components, home appliances, audio and video equipment, etc. Biomedical wastes, commonly referred to as hospital wastes, are results of medical or scientific activities, such as the treatment or immunization of humans or animals, and can be detrimental to both land and aquatic environments. C&D waste results from the construction and deconstruction of infrastructure such as roads, buildings, bridges, and subways. Any waste that poses a risk to individuals or the environment due to its reactivity, toxicity, combustibility, explosiveness, or corrosiveness is deemed hazardous. When batteries decay, heavy metals such as lead, nickel, lithium, and copper are discharged into the environment. Both mining and nuclear power plants produce radioactive waste, which is toxic to the environment and may negatively impact all kinds of life.

Menstrual waste produced by India each year: According to a new study, India's landfills get over 12.3 billion sanitary napkins annually, which amounts to 113,000 tonnes of garbage. This non-biodegradable debris is not managed or recycled effectively, so it ends up in landfills, where it will linger for generations and contribute to micro plastic contamination. Small-scale incinerators have become the preferred way to dispose of spent sanitary pads, however these low-cost solutions create poisonous gases, hence aggravating environmental and health issues. In addition, cancer-causing substances included in the pads that flood the market offer grave health dangers to women. According to the 2016 Solid Waste Management Guidelines, sanitary pads should be wrapped in pouches or newspapers supplied by manufacturers and given delivered to garbage collectors separately, however there is no management system in place. The majority of trash employees are compelled to operate in unclean circumstances without safety equipment.

Sanitary waste and how it is spoiling the environment: Sanitary waste consists of menstrual waste that is not composed of recyclable materials. According to a recent research, approximately 113,000 tonnes of old sanitary pads are abandoned annually in India, which is one of the reasons for the country's plastic pollution. The bulk of the 12.3 billion non- disposable sanitary napkins manufactured annually in India are neither biodegradable or compostable. There are two techniques of decentralised menstrual waste management: small-scale burning and composting. Sanitary waste disposal is not just a waste management issue, but also a public health and human rights concern that tarnishes the country's reputation. The majority of women dispose of sanitary pads and other menstruation products in residential solid waste or garbage bins, where they get contaminated and form part of solid waste. This is due to a lack of menstruation management practices and awareness regarding how to dispose of menstrual waste in the safest manner possible, as well as the incapacity of certain menstrual absorption components to move via sewage and pipelines. Those who live along or near riverbanks frequently dispose of their menstrual waste in bodies of water, polluting the water and creating breeding grounds for disease-causing germs and microbes.

What exactly is Waste Management?

What do you think waste management is? How would you define waste management? It is the collection, transportation, and disposal of trash, sewage, and other contaminants. Here in this project we will

look at the different methods that the developed, developing and the under developed countries have followed to get rid of their wastes, this project will also help us to know about the present waste management condition of some countries.

United Kingdom Waste Management: In the United Kingdom, landfills, anaerobic digestion, incineration, and other methods are used to dispose of wastes. These are the most prevalent tactics used in the United Kingdom. Every year around 111 million tons or in percentage around 57% of the whole country's waste (be it commercial, industrial and household wastes) are disposed of in the landfill sites. And when we talk about the other method. The country's approximately 2% of industrial waste, 7.5% of commercial waste, and 5% of household waste is disposed of by the method of incineration.

Let's see what uk's current waste policies features are

Waste Hierarchy: The national waste management policies of the United Kingdom are based on the EU model, generally known as the waste hierarchy system. The waste hierarchy requires waste managers to priorities waste avoidance, preparation for reuse, recycling, and other ways of recovery in that order.

Enhance recycling: The government's primary objective is to raise awareness and encourage individuals and companies to recycle more. In addition, numerous efforts have been implemented to encourage the general people to view garbage as a precious resource and promote a culture of recycling and reusing. These rules are primarily intended to promote the reuse of shopping bags and to prevent waste and pollution.

Diversion of waste from the landfill: According to the waste hierarchy, the government's primary purpose and motivation is to limit the quantity of garbage disposed of in landfills and encourage individuals to recycle and reuse it. In addition, there are limits on the quantity and types of garbage that can be disposed of in landfills. The Environmental Permitting (England and Wales) Regulations 2010 and the Scottish and Northern Irish Landfill Regulations are examples of similar legislation.

Controlling Hazardous Waste: The Environment Agency provides guidance on how to create, transport, receive, and dispose of hazardous materials. The disposal of hazardous waste is regulated by legislation, and the United Kingdom's waste policy seeks to restrict the quantity and hazard level of wastes generated. Households may still be able to dispose of a small amount of hazardous garbage in the usual streets or through normal rubbish collection, but greater quantities must be disposed of in specially-managed waste facilities. The disposal of intact and shredded tyres, batteries, and hazardous liquid waste in landfills is impossible.

Reduction of waste from the economy: The Industries and businesses around the UK produce quite a large amount of waste. The Aim of UK waste policy is to reduce the level and amount of waste produced by the commercial sector. Different policy changes have been made to get businesses and industries to reduce waste. For example, the Producer Responsibility Obligations (Packaging Waste) Regulations 2007 place responsibility on the producers of packaging waste to recover, reuse and recycle a part of packaging. Also, the items are supposed to be built to facilitate recycling and disassembly. Similar regulations governing producer accountability apply to Waste Electrical and Electronic Equipment (WEEE).

Shared Responsibility: The majority of the nation's waste management rules are based on "shared responsibility." Everyone creates garbage, thus everyone has a responsibility to avoid additional waste increase. And it is the obligation of all segments of society to appropriately reuse, recycle, and dispose of garbage.

Solid Waste Management in Urban India: In India, waste management is segmented into four categories: biomedical waste,

industrial waste, the market for electronic trash, and the market for municipal garbage. In each city, municipal corporations play a crucial role in waste management. The functioning of the Solid Waste Management (SWM) system is comprised of four key functions: street cleaning, collection, transportation, and disposal. It may be subdivided into several zones to assist the collection and transfer of solid garbage. Presently, the majority of India's waste management comprises of collecting junk from residential and industrial areas and disposing of it in landfills. Due to its fast expansion and urbanisation, India has a significant waste management issue. More than 377 million urban dwellers reside in 7,935 towns and yearly generate 62 million tonnes of municipal solid waste. 43 million tonnes of rubbish are collected annually in India, of which 11.9 tonnes are processed and 31 tonnes are disposed of in landfills. The majority of trash is disposed of irresponsibly in landfills, resulting in health and environmental deterioration. Still prevalent are waste dumping and open burning, and the obstruction of drains with rubbish leads to waterlogging and floods of residential areas, highways, and railways. Several communities have failed to implement door-to-door pickup, which renders landfills frequently unsustainable.

Waste Management in Pakistan: More than 5 million people die each year from diseases related by rubbish, making the waste management issue in Pakistan a huge worry. Each year, Pakistan creates roughly 20 million tonnes of waste (solid), with an annual increase of approximately 2.4%. Every day, Karachi creates more than 9 thousand tonnes of municipal trash. Lack of effective urban planning, lack of public awareness, antiquated infrastructure, and pervasive corruption are the primary causes of the problem. Local and municipal administrations are responsible for garbage collection in the majority of Pakistan's major cities. Handcarts and donkey-drawn carts are used for primary collection, followed by open trucks, tractor/trolley systems, and arm roll containers/trucks for secondary collection and transportation. A substantial amount of Pakistan's solid waste never reaches final disposal sites.

Impact of Waste on the environment: Waste has a profound impact on the environment, and the following facts illustrate the severity of the issue:

- **Pollution of Air and Water:** Improper disposal of waste can pollute air and water, leading to health hazards. According to the World Health Organization, exposure to air pollution caused an estimated 7 million premature deaths worldwide in 2016. Additionally, a study by the Ellen MacArthur Foundation found that by 2050, there could be more plastic in the ocean than fish.
- **Landfill Leachate:** Landfills generate a significant amount of leachate, which is a liquid that contains pollutants. According to the Environmental Protection Agency, there are over 2,000 active landfills in the United States, which generate an estimated 18 billion liters of leachate per year.
- **Greenhouse Gas Emissions:** Waste decomposition contributes to greenhouse gas emissions, which cause climate change. The Intergovernmental Panel on Climate Change estimates that 5-10% of global greenhouse gas emissions are from waste. Methane, a potent greenhouse gas, is generated during waste decomposition, and according to the United Nations, it is responsible for 16% of global methane emissions.
- **Soil Contamination:** Improper disposal of waste can contaminate soil, making it unsuitable for agriculture and other purposes. According to the United Nations, over 80,000 chemicals are in use globally, and many of them end up in the waste stream, leading to soil contamination.
- **Damage to Wildlife:** Waste can harm wildlife, with plastic waste being particularly problematic. According to a study published in the journal *Science*, an estimated 8.8 million metric tons of plastic enter the ocean each year, which can entangle or be ingested by marine animals.
- **Depletion of Natural Resources:** The production of goods and packaging generates waste and leads to the depletion of natural resources. According to the World Wildlife Fund, the

world's forests are being destroyed at a rate of 48 football fields per minute, and much of this destruction is due to the production of goods.

These facts highlight the significant impact of waste on the environment and underscore the need for action to reduce waste generation, improve waste management practices, and protect the environment

Menstrual waste and its impact on Environment: Menstrual waste, which includes sanitary pads, tampons, and other menstrual products, has significant negative impacts on both the environment and human beings. Here are some facts and figures that highlight the scale of this issue:

Environmental Impact:

- **Non-biodegradable:** The majority of menstrual products are made of non-biodegradable materials such as plastic, which means they do not break down naturally and can remain in the environment for hundreds of years. According to a report by the Ellen MacArthur Foundation, 700,000 panty liners, 2.5 million tampons, and 1.4 million pads are disposed of daily in the UK alone.
- **Landfills:** Improper disposal of menstrual waste in landfills can lead to the accumulation of waste, releasing harmful gases such as methane and carbon dioxide, which contribute to global warming. In the US, an estimated 12 billion pads and 7 billion tampons are disposed of annually, with most ending up in landfills.
- **Water pollution:** Menstrual waste can also contaminate water bodies, causing harm to aquatic life. A study conducted in the Indian city of Mumbai found that menstrual waste accounts for 40% of the total plastic waste in the city's waterways.

Human Health Impact

- **Infections:** Improper disposal of menstrual waste can lead to the spread of infections and diseases. This is because menstrual blood can carry harmful pathogens that can cause infections if not disposed of properly. According to a study by WaterAid, poor menstrual hygiene management can increase the risk of reproductive tract infections by up to 70%.
- **Toxins:** Some menstrual products contain chemicals and toxins that can harm the human body when exposed to them for prolonged periods. For example, dioxins, a toxic byproduct of the bleaching process used in manufacturing pads and tampons, can accumulate in the body over time and have been linked to various health issues such as cancer and endometriosis.
- **Occupational hazards:** The workers who handle menstrual waste can be exposed to harmful chemicals and pathogens, putting them at risk of contracting infections and other health problems. A study conducted in India found that workers who handle menstrual waste are at risk of skin irritation, respiratory problems, and infections.

Disposable pads may be used for both small-scale burning and composting, two decentralized techniques for handling menstrual waste. Small-scale incinerators, however, lack proper emission control mechanisms and burn garbage at low temperatures, resulting in inefficient combustion and the generation of carcinogenic poisonous gases. Composting is a fantastic choice for compostable pads, however research indicates that the absorbent cores of non-compostable pads can disintegrate, leaving the plastic elements behind. Effective composting requires community involvement and systems for waste segregation and aggregation, but a visit to the rubbish dumps of India's main towns demonstrates that menstrual waste will continue to damage land and water unless segregation norms are properly enforced. Menstrual waste must be managed and disposed of like solid waste, necessitating a series of processes. This is occurring in only two cities in India, which is inadequate. The trash collector and transporter should collect and transport the garbage, and the solid

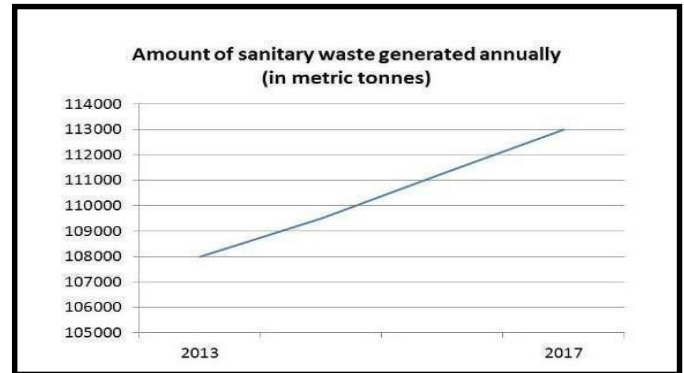
waste solution should be selected depending on the wasted items. Composting is difficult with commercially available sanitary napkins, but possible with those created from natural materials. On the packaging of biodegradable items, there should be explicit disposal instructions. Menstrual and other sanitary waste solid waste initiatives in India are sparse, with existing solutions usually applied in urban areas and just recently beginning to produce benefits. When it comes to menstrual hygiene products and waste management solutions, the majority of present techniques are either not advised or do not utilise the most suitable technology; yet, they are a quick and easy option that is commonly utilised in communities.

LITERATURE REVIEW

1. **Gautami Bhor, Sayali Ponshe**, India has a population of 1.3 billion people in different regions where there are 336 million women who menstruate every year. 41% of the women still use cloth during their menstruation but slowly they are moving towards sanitary pads. India has a population of 57% people using sanitary pads/napkins which means there would be a lot of waste generated because of this. Each year around 150kgs of non-biodegradable garbage is disposed by women. Women these days are getting aware about the need and importance of using sanitary pads/napkins which leads to an increase of sanitary pads/napkins every month. Although other products like menstrual cups, tampons and biodegradable napkins are becoming the trend these days, it will still take many years to start using it as people have just started moving towards sanitary pads. India on an annual basis disposes 113000 tons of menstrual waste. Depending on where we live and in which country we live the waste disposed differs and the waste generated also varies. There are no sufficient facilities for trash disposal. If garbage is not managed appropriately, it may be damaging to humans, animals, and the environment. Menstrual waste is one such sort of trash. Menstrual waste is a critical issue in the current global context, not only in India.



Government institutions are attempting to teach women about menstruation despite the efforts of several non-governmental groups, but there is still a significant problem, especially in rural regions and in traditional households. Women in the society and at their houses face a lot of issues regarding menstruation. It is considered as unclean, embarrassing or negative energy which restricts women on cooking, eating specific food, work activities; they are seen as untouchables. Changing pads/napkins is done secretly and thrown into the dustbin secretly, if it is hard to throw then they keep it under their beds or dig it into a pit and throw it later. Menstrual flow is considered as a dirty, shameful, negative flow of energy from it. People tend to hide it under their beds which would increase infections and there are high chances of medical issues. Frequently, women in India dispose of their menstrual products by flushing them down the toilet, tossing them into the drainage system, or placing them in rubbish cans. In India, toilets lack a container for disposing of sanitary pads and napkins, and the situation is far worse in public restrooms. Women are compelled to dump sanitary pads down toilets and leave them unwrapped in toilet nooks, resulting in the spread of illness and unsanitary circumstances.



Case study

There was a case study done in Pune on municipality works and their problems/issues. 30 workers who collect waste from 250+ houses (each person) were closely absorbed for 5 hours and noticed their issues regarding waste collection. The survey shows us a broader perspective towards waste collection and segregation methods and how menstrual waste is thrown. Often the waste is segregated by the people but many times it's not done. Major parts of India segregate only 2 categories of waste, i.e. wet and dry or biodegradable and non-biodegradable waste, which are either buried or dumped open into landfills. While surveyed waste pickers complained that in spite of telling people/households to wrap a sanitary napkin/pads with a newspaper and put a red dot on it so it can be identified basically, many times the sanitary pads/napkins are directly thrown into the bins and they have to pick it with their hand. Mostly waste pickers won't have gloves or any other facility as they are all from a very poor background and they can't afford it as well. When it is thrown unwrapped it leads to infections and diseases, it is very inhuman and filthy to do so. Many nations' studies have hypothesized a connection between working at open dumps and higher respiratory disease and unsatisfactory lung function tests. Number of sanitary napkins used is increasing and it would not be down as of now as well as in future. That's why we think our product will succeed in the market. And we will be the leading dustbin manufacturer and seller.

2. **J Environ Public Health**, Menstruation and menstruation habits are subject to several social, cultural, and religious limitations that provide a significant barrier to the management of menstrual hygiene. Girls in many regions of the country, particularly rural ones, are unprepared and uninformed of menstruation, thus they confront several obstacles at home, school, and the workplace. A study of the literature revealed that inadequate, erroneous, or insufficient understanding about menstruation was a significant barrier. In rural regions, women do not have access to hygiene products, have limited knowledge of how to use them, or cannot afford them owing to their high price. It is vital to educate and increase awareness about environmental pollution and associated health risks due to the fact that women manage menstruation differently at home than outside. Incinerators, reusable sanitary ware, and natural sanitary ware should be encouraged to decrease waste. The concept that menstrual blood is repugnant or filthy is the fundamental cause of a culture of silence and shame in several locations. Girls maintain a variety of limitations and take measures to conceal menstrual blood during their period. Even when trash containers are provided, women may choose for more discreet disposal methods, such as burial, when it comes to menstruation management in camps. More disposable sanitary pads are available than ever before, highlighting the need for disposal services. Health education and hygiene promotion programmes in schools boosted access to and usage of disposable pads, urged regular pad replacement, and suggested discarding worn reusable cloth after a few months. In Nigeria, people who received pre-menarche instruction were more likely to dispose of their old absorbents appropriately than those who did not. In schools in Accra, Ghana, there were insufficient toilets, insufficient privacy measures in toilets, and insufficient disposal facilities for used absorbents, according to a survey. The researcher called the female students in the school so that they can manage their menstrual waste.

3. Int J Environ Res Public Health (2018) The majority of India's approximately 12.3 billion disposable sanitary napkins are neither biodegradable or compostable. According to a research by the Menstrual Hygiene Alliance of India, they said 36% of females in India use throwaway napkins out of 336 million females in India. With the rising availability, usage, and waste burden of non-biodegradable menstruation products and the lack of proper disposal facilities, India's urban and rural communities face an imminent time bomb. The MHAI has convened a large group of individuals to discuss the escalating situation around the safe disposal of menstrual waste. The Regulations also place the obligation of waste management on producers through the development of essential infrastructure or financial assistance.

4. Sushmita Malaviya, The management of waste in a densely populated developing nation with a big and constantly expanding population involves a variety of issues. The research's primary purpose is the separation and treatment of dry and moist waste. Some human waste is biodegradable, some is recyclable, and some is neither biodegradable nor recyclable. Waste segregation is the separation of wastes based on how they are handled or managed. Garbage separation at unloading sites requires additional time and effort. This research offers a Spontaneous Waste Segregator (SWS) that is an inexpensive and straightforward solution for a residential separation system. The AWS distinguishes between wet and dry waste utilising a moisture sensor and ultrasonic sensors for continuous monitoring and GSM-based waste level notification to authorities. This technology may be employed in industries for everyday usage by personnel. It will be used for wet food waste as well as regular rubbish. The development of a microcontroller-based system for the automatic separation of wet and dry waste has occurred. As integrated circuits and microcontrollers get cheaper and as sensing devices become more accessible, the technology has become a reality.

5. Singhal, S., & Pandey, S Due to fast population expansion and economic development, MSW generation in India has expanded, and municipalities collect and transport it to authorised disposal locations. Municipalities in India have the problem of bolstering their existing infrastructure and assuring the scientific disposal of municipal solid waste by earning sufficient cash and establishing waste management operations that create resources. An increase in solid waste production will have substantial effects on land and methane emissions, necessitating the construction of transport facilities and infrastructure, and resulting in a decline in water quality owing to pollution. Using market forces to enhance waste management includes charging for the environmental and economic costs of production and disposal, establishing mandated standards, and educating businesses and consumers on voluntary compliance with laws. The private sector should be encouraged to engage in waste management in India in order to enhance technical and managerial skills, boost efficiency, and enhance customer service. The creation of municipal solid waste (MSW) in India has expanded dramatically as a result of fast population expansion and economic development, causing a serious environmental problem. The BAU scenario anticipates a 1,33 % increase in trash creation per capita from 1997 to 2047, totaling 260 million tonnes of rubbish. This will have enormous effects on methane emissions and land use. By the use of taxes and tax incentives, required standards and regulations, education and voluntary compliance, and the implementation of an EMS, it is possible to reduce waste at the source. The private sector should be encouraged to engage in waste management in India in order to enhance technical and managerial skills, boost efficiency, and enhance customer service.

6. Nandy, B., Sharma, G, The Indian government's recent implementation of legislation for the wellbeing of sanitation employees has increased the necessity for an automated waste management system. The current waste management system in India comprises of unclassified rubbish collected from houses and then manually separated at a station. In addition to being inefficient, time-consuming, and infeasible owing to their sheer quantity, the manual separation of solid waste poses a number of risks to the health of the trash sorters. In our research, we present an automated recognition system that uses the Deep Learning method in Artificial Intelligence

to categorise things as biodegradable or non-biodegradable. After trained with an initial dataset, the system can recognise and classify objects in real-time with high accuracy. Biodegradable garbage is utilised to create electricity, enhance the soil, and feed animals. This procedure does not affect the earth, which makes it useful, environmentally safe, and aids in the future protection of our environment, diverse ecology, and human occupants.

7. Sudha, S., Vidhyalakshmi, M, this study presents the first calculated emission factors for the incineration of healthcare wastes separated by kind in accordance with Portuguese law. The experiment made use of a single controlled-air incinerator that lacked air pollution control equipment. The study's primary objectives were to ever forecast the emission factors for particulate matter, dioxins, heavy metals, and gaseous pollutants based on the type of waste incinerated; to evaluate the quality of atmospheric emissions; and to develop a methodology for the management of atmospheric emissions. It was determined that when emission variables are not related with the kind of burned mixture, their usefulness is very questionable; without the proper equipment to regulate air pollution, incineration emissions exceed regulatory limits, jeopardising human health. To reduce air emissions, rigorous segregation methods must be employed, and only those wastes that are required to be burned by law must be burnt.

8. Alvim-Ferraz, M. C. M., & Afonso, S. A. V. (2005), Management and separation of healthcare waste (HCW) are vital for ensuring safety, environmental preservation, and cost control. Continuous monitoring and training are essential for maintaining strong HCW practices. Our goals were to assess and enhance the HCW procedures at Hospital Bloom in San Salvador, El Salvador. We evaluated HCW disposal methods by examining trash containers, re-segregating waste placed in biohazardous waste bags, and conducting a seven-item waste management knowledge assessment before and after training. The instruction was based on national and international standards, resulting in a 44% rise in right replies and a 48% decrease of proper hospital disposal. Hospitals may maximize their use of existing resources by preserving HCW best practices, particularly in lower-middle-income nations.

9. Muhib, M. I., Akter, R, this paper examines the current state of COVID-19-related medical waste creation and offers a way forward from the standpoint of lower-middle income nations such as Bangladesh. It was discovered that 1,588,104,000 facemasks are discarded in metropolitan areas alone, equating to 517 tonnes of solid garbage, while 5,203 tons of biomedical waste are introduced daily to conventional waste streams. These additional tonnes of hazardous trash endanger the nation's aquaculture and increase the risk of waste workers contracting dangerous illnesses. The findings also indicate that this epidemic has already impeded the country's ability to achieve its Goals by 2020.

10. Minghua, Z., Xiumin, F., Rovetta, municipal solid waste (MSW) production in emerging cities was especially severe in Pudong New Area, Shanghai, China in 2006, at 1.11 kg per person. This study presents an examination of garbage creation and composition and a thorough overview of municipal solid waste management (MSWM). It will describe the existing state of garbage collection, transportation, and disposal, analyses the current situation and highlight its issues.

Kumar, S., Smith, S. R., Fowler, India confronts significant environmental issues due to waste creation and insufficient trash collection, transportation, treatment, and disposal. This document describes a seminar organized by the Council for Scientific and Industrial Research-National Environmental Engineering Research Institute and the Royal Society on sustainable solid waste management for cities. Priority should be given to transitioning from garbage dumps to waste management systems that conserve valuable resources inside the economy. Sustainable and economically sustainable waste management must maximise resource extraction from waste and assure safe disposal of residual trash through the construction of designed landfills and waste-to-energy plants. In the waste management industry, India has obstacles relating to waste

legislation, waste technology selection, and the availability of adequately educated personnel. India will continue to suffer from poor waste management and the accompanying effects on human health and the environment until these essential prerequisites are satisfied.

Lack of waste segregation impacts on the environment: The impact of waste on the environment due to a lack of waste segregation can have significant consequences. Here are some facts that illustrate the negative effects of improper waste management:

- Landfills contribute to greenhouse gas emissions: According to the Environmental Protection Agency (EPA), landfills are the third-largest source of methane emissions in the United States. Methane is an extremely potent greenhouse gas which leads to global warming
- Improper disposal of electronic waste can be hazardous: Electronic waste contains toxic chemicals such as lead, mercury, and cadmium, which can contaminate soil and water if not disposed of properly. According to the United Nations, only 20% of e-waste is recycled globally, leaving the majority of it to be improperly disposed of.
- Plastic waste that is improperly disposed of can end up in the ocean, where it can be harmful to marine life. If current trends persist, there will be more plastic than fish in the ocean by 2050, according to the Ellen MacArthur Foundation.
- Recycling rates are lower when waste is not segregated: When waste is not properly segregated, it can be more difficult and expensive to recycle. According to the EPA, recycling rates in the US are around 35%, but this number could be higher if waste was properly segregated.
- Waste incineration contributes to air pollution: When waste is burned, it can release harmful pollutants into the air, including dioxins and furans. According to the Global Alliance for Incinerator Alternatives, waste incineration can contribute to respiratory problems, cancer, and other health issues.

RESEARCH METHODOLOGY

Research technique is used to assess the validity and reliability of a research.

Research Objectives: Research objectives describe concisely what a researcher wishes to achieve during the project. They help in summarizing and narrowing down the project and provide direction to the study. This research objectives for this paper include:

Finding out how the segregation of waste is done.

Determining whether they use sanitary napkins or any other product. Do they dispose of the sanitary napkins unwrapped?

Finding out the problems faced by the society during disposing of menstrual waste.

Survey Instrument: A survey is a tool for research consisting of a series of questions or other prompts intended to gather data from a respondent. Normally, a questionnaire for research includes both closed- and open-ended questions.

Sampling Plan: Our sample size is 60 participants and we have 52 respondents. The location of the study is India and the total population of Women India during the time the study was conducted was 360 million women (Menstruating).

Plan for data collection: This study was conducted from 28th November 2021 to 2nd December 2021. The participants could participate in the online survey by filling out the questionnaire sent through Google forms, which had 19 questions for each participant. The google form was sent and spread to willing participants through social media platforms.

Plan for analysis: The plan for analysis is to use pie charts and different types of graphs to make it easier for us to analyse and interpret the information that we received from the questionnaire. The questions in the questionnaire were about their disposal methods, segregation of waste and disposing problems. The questionnaire was designed separately for women and girls who undergo a menstrual cycle.

Statement of the Problem:

Lack of awareness of segregating of sanitary waste in India.

Data Analysis and Interpretation

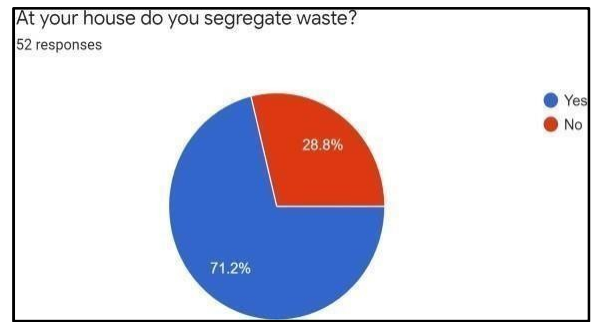


Fig. 1.



Fig. 2.

From Fig. 1 and Fig. 2 we find out that about 71% people segregate waste and 29% do not segregate, from that 70% people they segregate waste only into two types i.e., wet and dry waste or biodegradable and non-biodegradable waste. This information evidently shows that people are not segregating sanitary waste.

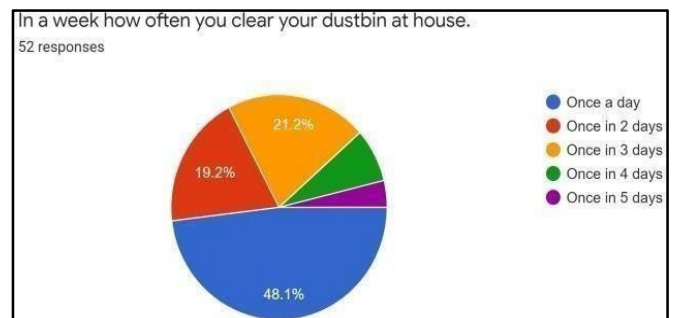


Fig. 3.

In Fig 3 we assume that nearly 50% of the people clean dustbins at their houses once in a day, and the other 50% clean once in 2 days or more. So we can assume that the dustbin would produce bad odour. From the above figure we can see that most of the people use sanitary napkins during their menstrual cycle, keep in mind the requirements of the consumer and from the above data which in Fig 5 we can see that around 60% of the people rarely dispose of sanitary napkins without wrapping it with newspapers. But contradicting to this point in Fig 6 that more than 70% of the people have seen sanitary napkins disposed of without wrapping it with a newspaper. Therefore, we can assume that people felt uncomfortable to say that even they have done it. But

there is still a part of society that does not dispose of it directly without wrapping.

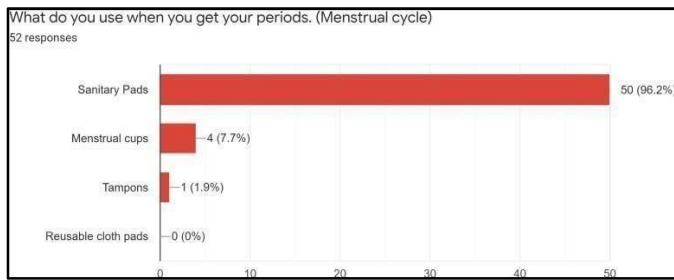


Fig. 4.

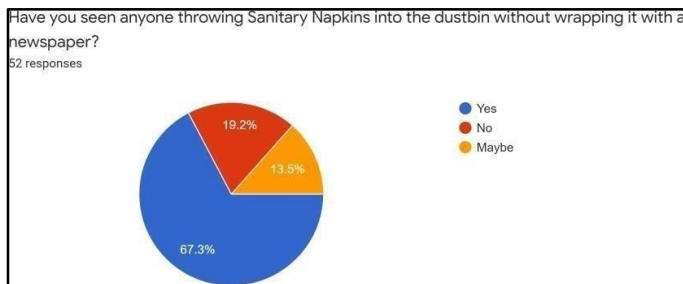
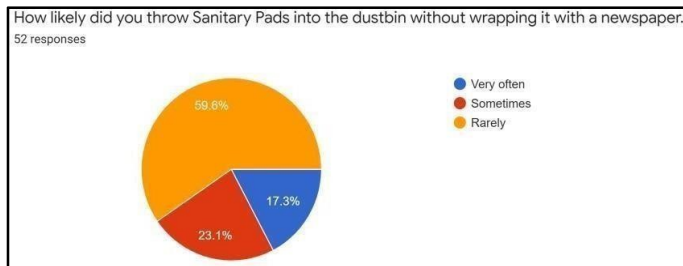


Fig. 5. & Fig. 6.

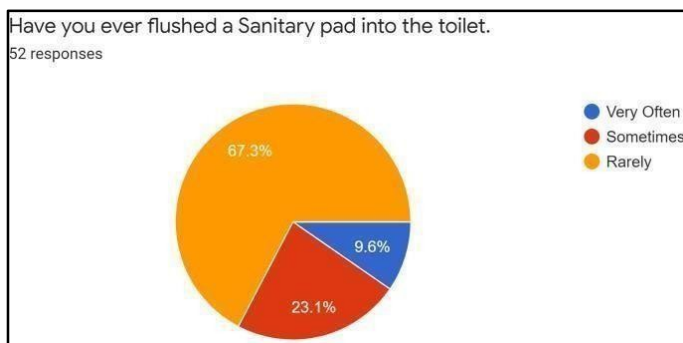


Fig. 7.

In Fig 7 the majority of the people rarely have flushed the sanitary pads/ napkins into the toilet, still there are some people who do it in case of emergency (assume). From this we can make an assumption that it could be in case of emergency, or lack dustbins, lack of newspapers etc.

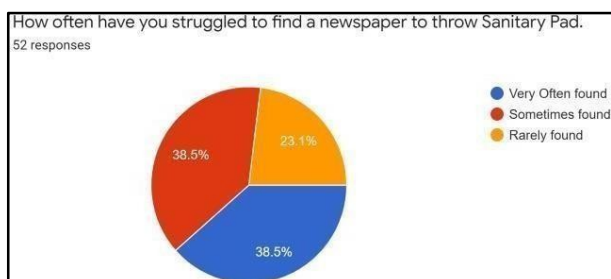


Fig. 8.

Fig. 8 shows that most often people struggle to find newspapers to dispose of their menstrual waste.

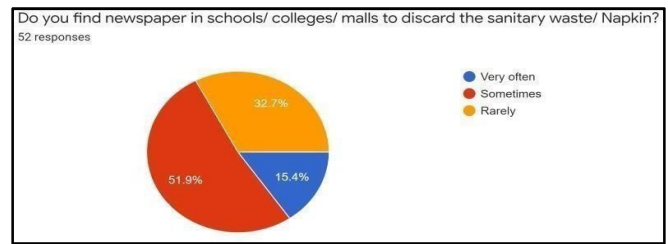


Fig. 9.

Fig 9 shows that 67% of the people found it difficult to find newspapers in public restrooms, malls, colleges, schools.

FINDINGS

Based on the information provided by the figures, it can be inferred that there is a lack of proper disposal and segregation of sanitary waste among the population. Although a majority of people use sanitary napkins during their menstrual cycle, there is still a significant percentage of individuals who do not wrap them before disposal. Additionally, flushing sanitary napkins into the toilet is not a common practice but may occur in emergencies or due to a lack of proper disposal options. The lack of availability of newspapers in public restrooms, malls, colleges, and schools further exacerbates the issue. Improving access to proper disposal options and increasing awareness about the importance of proper segregation and disposal of sanitary waste can help address this issue.

Limitations of the Study: By way of our topic is related to menstrual waste there are very limited research papers and articles published relating to the topic because not many people would feel comfortable writing about it and few might not know what's the importance of segregation the menstrual waste.

- Many of the other research papers that we found were focused on waste segregation. There were not many other papers that focused on menstrual waste segregation
- We could not collect as much information and data as we expected from our questionnaire because most of our questions were close ended questions.
- Majority of the respondents to our questionnaire are people from only one city, Bangalore, as we had limited ways to reach the other parts of India.

Few people who were the respondents to the questionnaire were not honest about the answers that they have given.

Suggestions and Implications: We would suggest the future researchers conduct an additional interview rather than fully relying on an online mode of survey. More open ended questions can be asked to obtain quantitative data. Unintended selection bias can be avoided if a wider demographic range is chosen and if there are bigger means for various people to take part in the survey.

CONCLUSION

To conclude that waste segregation in India as well as abroad is only categorized into 2 types dry and wet waste but people fail to see the sanitary waste needs to be a separated from the other waste as it causes harmful diseases, inadequate sanitation is associated with the spread of cholera, dysentery, typhoid, intestinal worm infections, and polio. It promotes to the spread of antibiotic resistance and exacerbates stunting. The future of the society can't be trashed due to solid waste pollution and dumping. Therefore, there should be a separate bin for just sanitary waste and should be thrown separately and treated separately to avoid getting affected by the diseases.

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