



Review Article

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ESTABLISHMENT OF ECO-FRIENDLY PANCHAKARMA CENTER: A REVIEW

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ABSTRACT

Ayurveda Panchakarma practitioner never use to think that where the oil, catheter, plastic bottles of oil and Ghee, gloves, blood, paper, powder, waste water and organic waste used in the Panchakarma end up after disposal, or considered how much water, electricity, paper and other resources our Panchakarma theatre uses. Construction and running of non-environment friendly Panchakarma theatre is not leading towards a green and clean planet. Ayurvedic practitioner need to take an evaluation of their Panchakarma practice considering the effects on the planet. Though individual Panchakarma Center generate only small amounts of waste, the accumulated waste produced by the profession may have significant environmental impact. Thus, there is need of thinking about the eco-friendly Panchakarma practice. Eco-friendly Panchakarma is an environment friendly way of practicing Ayurveda by using techniques and equipment to reduce waste, conserve energy, decrease pollution, and reduce harmful impact on planet. The incorporation of eco-friendly practice to the Panchakarma is not only effective from an environmental perspective but is cost-effective for the practitioner too. This article reviews the scientific literature on eco-friendly practices and suggests comprehensive steps to start an eco-friendly Panchakarma center.

Keywords: Establishment, Eco-friendly Panchakarma center, Establishment of Panchakarma center

INTRODUCTION

The concern for the environmental impact of human practices are being discussed globally since many years. According to WHO, SEARO, the 11 Southeast Asian countries together produce about 350000 tons of health care waste per year, and close to 1000 tons a day, which is both hazardous and non-hazardous waste. In Ayurveda profession, mainly the Panchakarma practice contributes to this abundant health care waste. Although individual Panchakarma center generate only small amount of waste but the accumulated waste produced together by the Panchakarma practice is having significant environmental impact. Ayurveda is very close and related to nature for healing processes so there is a need for Ayurveda Practitioner to be environmentally conscious and take the necessary steps to make their Panchakarma practice “Eco-friendly”.

Reasons for establishing an eco-friendly Panchakarma practice

The reasons for changing the current scenario of a Panchakarma practice into an eco-friendly practice are abundant, as a lot of practices followed in our center have a direct or an indirect effect on the environment. They can be listed as follow:

Infrastructure of the Panchakarma center.

Use of oil and powder for therapeutic procedures causing water pollution.

Use of traditional sources of fuel like LPG for heating water.

Excessive use of disposables for infection control.

Use of Diesel generator for power backup causes air pollution.

Wastage of resources like electricity, water, paper, etc.

Improper disposal of bio-hazardous waste.

Hence, there is a need to tackle these threats to the environment by adopting sustainable green Panchakarma practices in our center.

Rethink

The first step in transitioning to an eco-friendly Panchakarma practice is to re-think. Re-thinking means taking notice of the things that we do daily in our practice and asking whether there is a way to do them, that is equally affective and easier on the earth. It is a continuous process of making new choices or adopting new approaches in Ayurveda practices. Hence, every decision in our practice needs to be evaluated and necessary actions should be taken.

Designing and establishing a Panchakarma center

While designing an eco-friendly Panchakarma center, we shall start right from the construction. For construction, few things need to be addressed such as the building material should be derived from renewable sources: like agricultural waste, re-use of waste product: use of fly ash, iron ore tailings. Along with that the materials should not cause air, land and water pollution during and after the construction. Few examples are listed;

Roofing- Bamboo corrugated sheet

Traditionally used roofing materials such as cement, iron bars, gravels and sand consumes so much energy for transportation as well as construction. It causes pollution and consumes lot of time also. After the demolishment of building the waste of roof doesn't gets decomposed but it causes pollution again. So, to be eco-friendly, to save energy of transportation and to reduce the wastage of time on construction there is a solution i.e. Bamboo

mat corrugated sheet. Bamboo mat corrugated sheets are easy to install thus saves energy and time, consumes no natural resources such as water for construction as compared to a concrete roof. The bamboo mat corrugated sheet is also an ideal substitute for asbestos and galvanized steel sheets for roofing purposes. These sheets are environment friendly, energy efficient and possess good fire resistance as well.¹

Flooring- Eco-friendly tile

An Eco-friendly tile replaces the conventional flooring and uses less energy in their production. It is cheap as compare to the conventional tile. They are available as per the client requirement in various patterns and also easy to place. This tile improves performance of indoor environment quality.² Eco-friendly tiles are cheap in cost as compared to regular tiles; these tiles are manufactured on the construction site so that its transportation charges are reduced. Cost of regular tiles (Ceramic) is Rs.40 and that of eco-friendly tiles is Rs. 35.³

Bricks- Eco-friendly construction bricks from hematite tailings and fly ash

The conventional bricks are made from the mixture of mud and soil along with water. After giving shape it must be baked in high temperature in fire that needs a high quantity of wood. These all materials are costly as well as causing harm to our ecosystem badly. Fly ash and iron ore tailings are the waste products from the iron industries that should be dumped by the industries as their by-product. Now a day's fly ash bricks are easily available in cheap cost and can be used as an alternative for the conventional bricks. So, fly ash and iron ore tailings should be used as new raw material for building. They are more affective resource recovery alternative also an attractive method for energy saving and environmental protection.⁴

Fabrics for bed sheets and curtains- Fabrics produced by Aloe Vera, Jute, Bamboo, Banana, Cotton

The artificial fabric materials are used by everyone extensively as clothes, curtains, bed sheets etc. in hospitals and therapeutic centers. Artificial fibers cause allergies to several people and also, they are not good for health beside that after their disposal they are causing pollution and thus harm to the environment. Natural fibers have intrinsic properties such as mechanical strength, low weight and healthier to the wearer that has made them particularly attractive. The fabrics made from eco fibers can be worn by any one as they do not have any irritating chemicals in them. Hence the usage of eco fibers and organic are the best solution to keep our earth clean and to minimize the global warming. At present, the use and disposal of the textile will be more of environmental sustainable to minimize harm to people.⁵

Paint- VOC free paint

Painting is the coat which is exposed continuously to the patient and the people working in the hospital and therapeutic center building. It emits several chemicals and vapor to the air what we breathe. There are some harmful chemical present in several paints known as VOC, which is a very harmful substance. VOC components in hospitals and work spaces can negatively affect the health. House hold things such as tables, chairs, wardrobe and paints on wall contains harmful chemicals that contains volatile organic compounds (VOCs) which are toxic in nature. U.S. Environmental Protection Agency has declared them as pollutants. So, to be eco-friendly and to make the Panchakarma center eco-friendly, healthy and environmentally safe alternatives such as low or zero-VOC paints should be used.⁶

Practices

After the construction of eco-friendly center for Panchakarma, the practices to run the Panchakarma center should also eco-friendly. The eco-friendly practices which should be followed in Panchakarma center can be listed as:

Save Resources

The resources like energy, water, paper, etc., need to be used resourcefully. All the appliances should be switched off when not in use. Low-flow water tap can be installed on all sink faucets to conserve water.

Appropriate selection of appliances to reduce the power consumption

Whenever choosing an electrical appliance for the center, look for energy saving alternatives. Use LED monitors for desktop, as they cut energy consumption in half. Wherever possible use a laptop, which is more energy conservative. Appliances like air conditioning and light fixtures equipped with occupancy sensors power saving capabilities. Always check for the energy star label of the appliances before buying. More the stars on the label means more energy conserving the appliance. By taking above steps 24 % energy can be saved per month.⁷

Waste water management

Panchakarma center needs a lot of water for different purposes such as preparation of Panchakarma medicaments like Kashay (decoction for therapeutic procedures), hot fresh water for drinking and bathing, water for Herbal Garden etc. So, wherever there is need of fresh water that should be used judiciously. And the water which becomes waste after the bath and various therapeutic uses should be Recycled and can be used for irrigation of Herbal garden.

Recycling the waste water- The waste water of Panchakarma center mainly consist of oil, powder, human waste etc., it should be processed and recycled before disposing it to municipal sewerage lines. So, for that purpose a center should install oil grease separator primarily followed by a water treatment plant, then it can be disposed to municipal sewer line or can be used for irrigation and other purposes.

Wastewater treatment plant- Wastewater treatment plant should be constructed for bigger Panchakarma units or Ayurveda Hospitals that will reduce the overall water pollution by the hospital and facilitate re use of waste water for different purposes. The treatment plant ensures the removal of Physical, chemical and biological waste from wastewater to produce waste stream or solid waste suitable for discharge or reuse. Wastewater treatment plants are of various types such as Effluent Treatment Plants (ETP), Sewage Treatment Plants (STP) and Common and Combined Effluent Treatment Plants (CETP). Among these types STP is suitable for Panchakarma units. This plant removes contaminants from wastewater and household sewage, both runoff (effluents) and domestic. It includes physical, chemical, and biological processes to remove physical, chemical and biological contaminants.⁸ Studies also shows that the reclaimed or recycle water can be applied at rates sufficient to supply a crop's water needs without risk of surface or ground water contamination.⁹

Appropriate use of fuels

Panchakarma center needs lot of fuel for heating purposes, preparation of Panchakarma medicaments and power back-up etc. for these all purposes we can use non-conventional sources of energy like- Solar water heaters instead of Gas-geysers or electric-geysers. Solar power backup systems instead of diesel-generators etc. they are eco-friendly as well as economical also.

Go Paperless

Going paperless is truly a revolutionary approach. Using computers and other devices to maintain all records and digital patient communications helps not only save paper but also saves manpower and time.

Eco-friendly detergents

For any health care unit, the prime factor for giving proper care and better health is the hygiene. For maintaining hygiene, the linen and cloth are to be washed daily which needs lot of detergents. Detergents gives lot of impact on ecosystem by contaminating and polluting the water so always the center should use eco-friendly detergents for washing purposes. A class of non-ionic surfactants are available as green cleaning or eco-friendly cleaning agents. They are known as APGs, which can be used for household and hospital applications. APG are made up of sugars, generally glucose derivatives with or without fatty alcohols. APG enhances the formation of foams for washing and including gentle fabrics. In addition, they are having favourable foaming qualities with biodegradability.¹⁰

Table 1: Table of segregation of Panchakarma waste with respect to Bio-medical waste (management and handling) rules¹⁴

Sr no.	Procedure and waste	Category	Type of waste	Treatment and disposal option
1	Shiravedhana (blood-letting)			
	Gloves, cotton,	Category No. 6	Soiled Waste (Items contaminated with body fluids including cotton, dressings, soiled plaster casts, lines, bedding and other materials contaminated with blood.)	incineration / autoclaving / micro waving
	Needle	Category No 4	Waste Sharps (Needles, syringes, scalpels, blades, glass, etc. that may cause puncture and cuts. This includes both used and unused sharps)	Disinfecting (chemical treatment / autoclaving / micro waving and mutilation / shredding
	Blood	Category No. 1	Human Anatomical Waste (Human tissues, organs, body parts)	Incineration / deep burial
2	Abhyanga (massage), Patra/Shashtik Shaali/Jambeer pinda sveda			
	Disposable paper and under wears	Category No. 7	Solid Waste (Waste generated from disposable items other than the waste sharps such as tubing, catheters, intravenous sets, etc.)	Disinfecting by chemical treatment / autoclaving / micro waving and mutilation / shredding
3	Parisheka (Decoction bath), Udhavartana (powder massage).			
	Waste oil	Category No. 5	Discarded Medicine and Cytotoxic drugs (Wastes comprising of outdated, contaminated and discarded medicines)	Incineration / destruction and drugs disposal in secured landfills
	Powder	Category No. 5	Discarded Medicine and Cytotoxic drugs (Wastes comprising of outdated, contaminated and discarded medicines)	Incineration / destruction and drugs disposal in secured landfills
4	Sneha-pana (internal oleation therapy)			
	Disposable paper cup	Category No. 7	Solid Waste (Waste generated from disposable items other than the waste sharps such as tubing, catheters, intravenous sets, etc.)	Disinfecting by chemical treatment / autoclaving / micro waving and mutilation / shredding
5	Vamana-Virechana (induced emesis and purgation)	Category No. 8	Liquid Waste (Waste generated from the laboratory and washing, cleaning, housekeeping and disinfecting activities)	Disinfecting by chemical treatment and discharge into drains
6	Basti (medicated enema)			
	Catheter	Category No. 7	Solid Waste (Waste generated from disposable items other than the waste sharps such as tubing, catheters, intravenous sets, etc.)	Disinfecting by chemical treatment / autoclaving / micro waving and mutilation / shredding

Biomedical waste management

Finally - Medical waste management. The waste of health care unit also consists of Pharmaceutical waste in the form of expired medicines which has to be discarded judiciously through biomedical waste management agencies.¹¹ The waste of Panchakarma centers are non-hazardous like papers, hazardous

waste comes from Shiravedhana or bloodletting therapy such as infected blood, needles, gloves with blood, catheters of Basti (medicated enema) etc. This all wastes should be classified according to their source, type and risk factors associated with their handling, storage and ultimate disposal which is mentioned under the schedule 1 of bio-medical waste management.¹² The handling, storage, disposal should be followed according to

schedule 2 of bio-medical waste management.¹³ Bio-medical waste management is the most important part of running eco-friendly Panchakarma center.

DISCUSSION

The conventional building materials are consuming lot of energy for production, transport and construction beside that they cause pollution after destruction of building. These materials are not biodegradable so they cause environment pollution whereas the eco-friendly buildings are biodegradable or can be easily used for reconstruction. The materials like Bamboo corrugated sheets are made up of natural fibers so they are biodegradable as well as energy efficient also. Eco-friendly building materials like Bamboo, eco-friendly tiles, bricks etc. consumes less energy for their transport and manufacturing, as compare to the conventional materials. Using natural and biodegradable materials for linen, curtains and gowns are good practices for health of patient, therapist and environment also. Green construction and practices makes the Panchakarma environment-friendly, it reduces the environmental impact by reducing the pollution and cost thus helps us to be a step ahead towards green and clean future. Recycling and reuse of water conserves lot of fuel and energy and prevents water pollution thus it helps to reduce ill-effect on the ecosystem. Last but not least the proper management of bio-medical waste like catheter, gloves, anatomical and chemical waste also prevents the environment pollution and serves the need of eco-friendly Panchakarma center.

CONCLUSION

Although the small steps taken by individual center cannot be measured, but attempts should be made towards an eco-friendly approach. Panchakarma is an ancient healing science with help of nature and natural substances. Hence, being a part of this profession we must be responsible and concerned for environment, so following above steps we can make our Panchakarma practice eco-friendly; for a greener and healthy future.

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