



## ECO-FRIENDLY DENTISTRY: AN ELUCIDATION TO THE IMPACT TO BE PRODUCED BY FUTURE CLINICS

**Ms. Saumya Lal\***

BDS Final Yr Student, Maitri College Of Dentistry And Research Centre,Durg

\*Corresponding Author

**Dr. Vaibhav Motghare**

Assi. Professor, Dept. of Public Health Dentistry, Maitri College of Dentistry and Research Centre, Durg

**ABSTRACT** Humans are creator, destroyer and nourisher of his own existence in hand to hand with environment and atmosphere. Each organism is designed and mastered his own role to serve and maintain ecological balance. However, human outfocuses and master over them, destroying this beautiful balance. A dentist's ignorance can add on the hazards and enhance pollution. Biomedical wastes, radiological and electronic wastes add on major part of this sin. Lead, silver, mercury etc. are responsible for severe serious hazards. These ignorance are usually encountered during conventional practices. To aware the new is better and easy than to amend the old. So, this article focuses on the new concept of eco friendly dentistry and conveys the pros and cons to the budding clinicians. This review article focuses in need, design, management, maintenance and barriers in practicing eco-friendly dentistry or Green dentistry.

**KEYWORDS :** Eco-friendly-dentistry, Green dentistry, pollution

### INTRODUCTION:

It has been precisely said that "without any sense of care there will not be sustenance of a community!"<sup>[1]</sup>. This care is not restricted to an individual, society or the nature but equally strewn in the ecosystem. Every individual can spread his share of compassion towards the ecological boons through their area of mastery. A little effort can lead miraculous outcomes. Youth is tantamount in creating miracles and clinicians are blessed to cure, so the young clinicians are blessed to augment and beautify environment and ecosystem.

As per the records of Dental Council of India, currently there are 317 dental schools in India with 25000 fresh dental graduates egressing out per year<sup>[2]</sup>. Most of the budding clinicians often prefer to have a private setup for practice. Being a budding professional it's their fiality towards the ecosystem to reduce the harm and help to replenish the ecological balance.

The two faces of coin in the management of dental clinic in a routine practice are : replenishment of necessities and exit of the wastes generated. Wastes after dental treatment is increasing since few decades. These heaps if not managed wisely can harm the environment. So, to increase the energy efficiency is Eco-friendly dentistry or Green dentistry.

### Concept of Green Dentistry :

Green is the colour of renewal, growth and hope. It beautifies vision and endurance.

"Eco-friendly dentistry is the approach to dentistry that implements sustainable practices by keeping resource consumption in line with nature's economy by safeguarding the external environment by virtue of eliminating or reducing outgoing waste and by promoting the well being of all those in the clinical environment by conscious reduction of the chemical in breathless air"<sup>[3]</sup>

In India National Green Tribunal, has issued various direction for protection of environment and health<sup>[4]</sup>. It also includes control of environment pollution by:

1. Adopting Green Technology.
2. Recycle & reuse of waste material.
3. Pollution control equipment installation.
4. Waste minimization techniques include for better housekeeping and work practices.

Green Dentistry is the best choice for a clinician to add his share of efforts to be the savior of environment and conserving his own time and money by reducing waste, conserving energy and using latest technique and procedures to decrease pollution. Reference if taken

### THE FOUR DEDICATED A "R"MS of care<sup>[5]</sup>:

1. "R"educer: minimizing the amount of waste generated.
2. "R"ecycle: converting certain wastes to new materials and

objects, saving the materials and lowering the emission of greenhouse gases.

3. "R"euse: using reusable items over the single used item.
4. "R"ethink: thinking of environmentally better options at every step is key to eco friendly practice.

Various categories of wastes and their management is written below:

**Table 1: Dental wastes and their management:**

Category of waste	Type of waste
Biomedical	Extracted teeth, bone remnants
A>anatomic	Gloves, dental materials, drapes
B>non anatomic	Scalpel, blades
C>sharp	
Silver containing Waste	Fixer, Unused x ray films
Lead containing waste	Lead aprons, lead foils
Mercury containing wastes	Mercury, silver amalgam
Chemicals	Disinfectants, sterilizing agents

### The WORLD Bank's healthcare waste management guide list four steps of waste management<sup>[6]</sup>:

1. SEGREGATION- means dividing waste into dry and wet. Waste can also be segregated on basis of biodegradable or non-biodegradable wastes
2. TRANSPORTATION- is the movement of waste over a specific area by trains, tankers, trucks, barges, or other vehicles.<sup>[8]</sup>
3. TREATMENT- Thermal or biological treatment. Eg. Incarnation, combustion, sanitary landfills
4. FINAL DISPOSAL- disposal of treated wastes in equitable and wise manner. Recycling of waste can also be considered.

Disposal of waste in a simple and systemized manner is equally important. This is depicted in table below:

**Table 2: Waste disposal in color coded bin manner<sup>[7]</sup>**

COLOUR	Wastes Disposed
1. Yellow [non-chlorinated bags and containers]	Solid wastes: infected with blood and body fluids such as gloves, casts, cotton swabs, dressings, wastes and remnants with blood and tissue as components.
2. Red [non-chlorinated bags and containers]	Chemical wastes: disinfectants Chemical liquid wastes: film developer and fixer, disinfectants.
3. White [puncture-proof, leak proof, tamper proof]	Contaminated [recyclable]: Syringes and gloves Sharp instruments, scalpels, blades
4. BLUE [collected in cardboard boxes with blue colour markings]	Glasswares, medicine vials, ampoules [uncontaminated and not cytotoxic]

**Smart approach :****Reusables Over Disposables<sup>[13]</sup>**

1. use gowns ,drapes and made up of cloth over disposable ones.
2. using stainless steel over plastic goods.
3. using glass syringes over plastic ones.
4. autoclavable stainless steel suction tips over plastic ones.
5. using stainless steel prophylaxis cups over plastic cups
6. using stainless steel impression trays over plastic trays.
7. using sharpening stones instead of disposing dull instruments.

**Recycle – A little we do to create new<sup>[15]</sup>**

An Equisite recycle program should be followed for plastic and paper wastes. Also the pro consumer recycled paper and plastic products can be encouraged over the traditional ones.

Electronic goods such as LED ,CRT monitors can be given to private organizations such as DELL & HP which accepts these wastes to get them recycled.

Dental materials such as dental waxes ,casting alloys ,silver amalgam dental instruments and gypsum can be recycled and reused.

**DESIGNING YOUR GREEN DOMAIN- AN ECO-FRIENDLY DENTAL CLINIC:<sup>[7]</sup>**

India being one of the largest hub of dental clinics has a significant role in producing heaps of hazards to environment and ecosystem in near future. Designing an eco-friendly surrounding is not only a little of the effort we put in this plan but also a constant reminder for our action plan. Following are the little modifications we can do in designing a conventional dental office to an eco friendly clinic:

- ULTRA LOW OR ZERO VOLATILE ORGANIC COMPOUND containing paints should be used to paint the walls.
- Linoleum flooring should be preferred.
- using Compact fluorescent lamps over conventional bulbs.
- using double glazed window for temperature barrier.
- save energy whenever possible :single switch control to switch off all electrical switches after working hours.
- Energy Star rated electrical appliances should be used
- Natural pest control methods should be preferred. Natural pesticides and growth products should be used for maintaining office lawn.

**Acclimatize with Latest technologies to master the time,energy and efficiency:**

- computographic patient records over paper records. A folder separately made for patient that includes radiographs, photographs and payment records digitally saved.
- Digital radiography should be adopted over conventional radiography to reduce wastes and radiations generated by 70%-90%.
- Digital optical impressions combined with CAD & CAM can be adopted to minimize wastage of material and obtain high accuracy.

**Green dentistry –a Smart wellness lead.<sup>[6]</sup>**

The 10 wellness based modalities are:

1. Early caries detection with the help of laser diagnostic tools
2. Oral cancer diagnostics tool, such as VELscope technology for early detection
3. Salivary testing to determine genetic predisposing factors and identify the pathogenic bacteria
4. Use of Laser treatment for periodontal disease
5. Aromatherapy which helps the patients to relax naturally
6. Homeopathic treatment can reduce swelling and bruising for the patients after dental procedures without drug interaction
7. Hand or foot massage to relax patients
8. Presence of live green plants in the operatory area to increase oxygenation
9. HEPA type air purifier or UV germicidal in operatory air purifiers can be used to remove particulates from air
10. Nutrient coenzyme such as CoQ10 antioxidant can be used to for general well being of health.

**Barriers in execution of Eco-friendly dentistry:<sup>[4]</sup>**

1. Green dentistry being a nascent concept is less popular among the fraternity. Clinicians are still naive of this notion.
2. overexploitation of natural resources
3. It can be a herculean task to influence clinicians to modify the

entire clinical setup to an eco friendly dental office and moreover accustom to eco friendly methods of management.

**CONCLUSION:**

Adopting Eco-friendly dentistry will act as two-bladed sword in demolishing heaps of wastes and hazards and eliminating the chances of depletion of environment and ecosystem with beautification and purification of surroundings and atmosphere. It is not only a humane service but also a profitable business saving time ,money,energy and environment. Also clean ,green and purified surroundings will give a fresh mind and energy boost to work more efficiently in the clinics.

**REFERENCES:**

1. Antony JD' Angelo. Available from: [https://www.brainyquote.com/authors/anthony\\_j\\_dangelo](https://www.brainyquote.com/authors/anthony_j_dangelo). [last accessed 20 October 2018].
2. Dental council of India. List of Recognized Dental Colleges. Available from: <http://www.dciindia.org/index.aspx>. [Last accessed on 2017 Dec 28].
3. Arora S, Mittal S, Dogra V. Eco-friendly dentistry: Need of future. An overview. J Dent Allied Sci 2017;6:22-7
4. Mohelay N., Deolia S., Jagyasi D., Lakhwani R., Sen S., Chapekar J. Eco-Friendly Dentistry: A Green Business with Teeth. International Journal of Oral Health and Medical Research. JULY-AUGUST 2016. VOL 3 (2): 66-70.
5. Chopra A, Gupta N, Rao NC, Vashisth S. Eco-dentistry: The environment-friendly dentistry. Saudi J Health Sci 2014;3:61-5
6. Rathakrishnan M, Priyadarhini A. Green dentistry: The future. Journal of the International Clinical Dental Research Organization. 2017 Jul 1;9(2):59.
7. Farhani A. Eco-friendly Dentistry: Not a Matter of Choice. JCDA. September 2007, Vol. 7(3)581-84
8. Rastogi V, Sharma R, Yadav L, Satpute P, Sharma V. Green dentistry, a metamorphosis towards an eco-friendly dentistry: A short communication. J Clin Diagn Res 2014;8:ZM01-2.