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## GREEN DENTISTRY – A TRANSFORMATION TOWARDS A SUSTAINBLE AND ECO-FRIENDLY PRACTICE TO GET OUR GLOBE CLEANER

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### ABSTRACT

In today's world it is extremely important for us to understand value of an ecofriendly and sustainable practice in almost every sphere of our world including the dental practice dentists are associated with. Dentistry has got a major role in producing unnecessary toxic products which harm the environment in the long run. Also, it leads to wastage of many resources worldwide. Most amount of water and electricity used in dental practice can be monitored. When there will be a control on usage of such resources an ecofriendly practice can then be implemented which is beneficial not only for the dentists or the patients but for the whole community globally. Hence it is ought to be our responsibility to follow healthy practices in dentistry and other lifestyles patterns to have our environment stable for our future generations as well.

**Keywords:** Green Dentistry, Eco-Friendly Environment, Sustainable Development, Waste Management, Toxic Products, Amalgam, Lead.

### INTRODUCTION

Apart from major other evolving patterns in dental field green or sustainable or ecofriendly dental practice is seen rising nowadays. This kind of approach required is comparatively superior so as to move towards the healthier practice. In such patterns there is a proper involvement of model in which proper guidelines regarding services data provided by dentist worldwide are mentioned. This trend of dental practice is an initiative towards protecting our resources and the environment as ultimately overall health lies in this aspect.<sup>1</sup>

The reason of calling or assigning the term green is because green color is a visionary color and it provides table and tolerable characters. Along with them this color is also known to heal and is known to be a very comfort giving color. Main steps involved in this practice involves conserving natural resources of water and energy by using products which are not poisonous reducing production of waste and its management neglecting the usage of products which carry greater amount of risk and further severely impact humans along with their surrounding environment and also promoting products which are bio friendly. Keeping in mind the limited amount of resources and the amount of waste/toxic products being generated we can easily say that such practice is the need of the hour for a good and sustainable living and this can only be brought into practice when everyone involved with dentistry does a practice keeping in mind the limited number of resources and the amount of waste generation that occurs.<sup>2</sup>

### GREEN DENTISTRY ELEMENTS

Models were made by many associations whose ultimate goal was to frame protocol which are related to awareness for environment and that based on wellbeing, further helping other dentist to inculcate such practices which leads to ways in which the consumers' needs are fulfilled in ecofriendly way. There are four formulatory steps –

Decrease in production of waste and decrease in amount of pollution- Through a dental clinic a massive amount of wastes are generated of medical background. With the help of Universal color-coding protocols for waste disposal and waste should be disposed as pee that color coding only.<sup>3</sup>

Major amount of waste generated from a dental clinic and which leads to pollution are from the amalgam restoration handling by traditional radiograph system, all tools of controlling infection be it covers which can be discarded or any other lethal disinfectants or through the saliva ejector. Usage of mercury in dentistry goes back to more than 100 years ago if we talk about dental amalgam, it has major amount of mercury present along with silver and tin and lead along with other materials which might pollute the surroundings. Element of mercury, when it gets into earthly elements it gets converted into methyl Mercury. This is a very capable toxin causing damage to neurons brain along with kidney and lungs in people. The results of this damage caused is very high as this particular element is very easy to be administered in terms of its usage in dentistry. Possible ways by which mercury contamination can be avoided by making use of other restorative materials example GIC and composite and by making use of amalgam separator and by doing recycling



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of the non usable amalgam, all old dental clinics made the use of X-rays of all type. By making use of X-ray this way has led to a very prevalent damage because silver and lead.<sup>4,5</sup>

Silver comes from fixer which is left unused and lead comes from covers of the film and at times from Apron or Shield used for protection. If we talk about the most common types of ways that are generated from dental practice are equipments used in radiography or from solution of developer or from the radiographic since used fixer has got silver which is also major source of pollution all from the developing liquid which contains chromium. Different methods by which we can avoid pollution generated by radiographic armamentarium are if we switch over to digital imaging or by using developers which doesn't contain chromium, any kind of lead which is waste should be caught, and for picture and its dumping we can use filters. Various color coding given regarding waste management for dumping biomedical waste. Yellow given for all the ways that is anatomical which includes various body parts and organs all the ways which is already infected like cotton blood containing bags all the medicines which are already expired in form of ampoules and vials, the liquid which contains chemical waste of having x-ray films, fluids which are taken from aspiration, liquids taken from laboratories and washing done on floor. All the wastes generated from various other link departments of microbiology and Biotechnology. Red colored non chlorinated banks contain thrown away plastics which include plastic bottles and tube various catheters and bag which contains urine etc.<sup>6</sup>

White plastic bags need to be free from puncture as they contain needle or those challenges which contain immovable needles.

Blue color contains various types of glassware which are already broken or our already discard it they are also potential source of infection.

### Water conservation energy Preservation and money saving

If we talk about the main aim of upcoming times of dentistry from ecological point of view it will be conservation and preservation. Also, we should make it a point that whenever we will leave our dental clinic or any workplace associated with dentistry, we should put off even that tiniest of lights which will help in reducing the resources used. Not only dentist but everyone associated with the dentistry should follow this practice.

All the electrical equipments should be turned off, all the desktop or camera which is intro oral or the TV or any kind of light should be turned when no one is present in the workplace. By doing this small action we can preserve much amount of energy .<sup>7,8</sup> We can also preserve energy by plugging out those items which don't seem to be in much use. A very motivating achievement that can be seen and current scenario is by instilling those equipments which helps in conservation of water energy and various other resources. We can even reduce various amount of energy consumed by various traditional kinds of halogen bulbs used by replacing them with the LED lights used. In the present time much advancement has been made and to such extent that vacuum systems are developed which are waterless and which helps in saving more than 300 gallons of water in a day. If every dental operatory field gets this installed in the operatory area then on an average in a year, we will be able to preserve up to 10 million gallons of water. Giving it just a thought as to how much amount of conservation and preservation at a large level could be done if we inculcate this green dentistry into practice. This is beneficially ecologically as well as financially for every creature of this planet. By using reusable cups for the purpose of drinking and tips which have metallic suction which were used by nearly 50% and 60% of dentist favorable implementation of practice can be achieved as sterilization is very easy for both of them. With the help of high-tech technology is it can lead to better ecological environment along with conservation of various resources. If we take the help of digital resources, we can also get along with the diagnosis that can be identified previously along with remedies that are preventive in nature and along with getting knowledge that provides convenient treatment to all the patients and it is also beneficial as it prevents unnecessary amount of wastage of common people.<sup>9,10</sup>

Some of the advancements that lead towards ecofriendly future dentistry are - digital system in imaging, CAD system, CAM system, chemicals can be avoided with the help of steam sterilizer, if we enter patients details digitally, interaction between patient and his doctor by digital technology, for marketing purpose we can use digital marketing, all records can be saved electronically, compressors which can be used should be oil free.

### A LIFESTYLE THAT PROMOTES GOOD HEALTH

If we talk about dentist involving usage of Technology so as to assess overall health of an individual with the help of periodontal tissue assessment as we already know that health of periodontal tissue represents overall health also these Lifestyle related diseases are



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somehow related to immune system or immune response received by an individual, we already know that oral cavity is the mirror to general Health of an individual.

If we see gums that are already inflamed and bleeding is present in them that is an indication that body's immune system's response is somewhere compromised and on the margin of destructive disease and we can also witness bleeding that will not be continuous or a swelling that can also be seen.

Same way if we talk about the quantity of pathogenic organisms, present in the oral cavity and when we can observe that their amount in the oral cavity is disproportioned, at that time cells of periodontal tissue represents necessity for a response from immune system. And if the bacteria didn't get back to their original version that tissue of periodontium can become location of inflammation that is chronic in nature initially the stages referred as individuals and Later on this progression is referred as periodontitis. if we go along a survey, we can get to know that more than 75% of population has this progression of disease seen in the gums, if this issue is not looked properly then our own teeth can't be left stable in owns place. They get mobile in nature, so this kind of condition should be evaluated initially and at an earlier stage.

These bacteria that was present in the mouth must have travelled to other body parts as well and would have cause many other diseases. This movement was facilitated by various body Fluids example by blood and this causes many diseases that are long term diseases. If there is a regular assessment of the condition of periodontal tissue on timely basis then such conditions can be avoided and this can be achieved by a regular and professional scaling be it ultrasonic or manual done on a timely basis.

Advices to sustain a good health by practicing some good oral procedures are-

1. Equilibrium of the cavity can be best ensured by having a salivary diagnostic test done by a dental professional
2. For the periodontist who is doing any patient it is his or her responsibility to frame a chart as per patient's requirements for a timely visit.
3. Make sure that you consume such dietary foods that are somehow providing could health to an individual and also those food which contain antioxidants and anti-inflammatory properties.
4. Do a regular visit to your dentist as that will help in maintaining a good hygiene throughout.
5. If your hygienist is recommending you something, follow that properly.

### ADVANTAGES OF GREEN DENTISTRY

This specified branch is a complete and overall initiative to take care of oral health which reduces all the negative effect of dental practice and further helps in building in environment which is ecofriendly.

4 basics strategies are used in it re thinking reducing reusing and recycling.

By making use of advanced technology along with appropriate approach all of us can be a component of an eco-friendly and sustainable green dentistry environment in future.

This aim can be achieved by following steps-

1. Conserving energy if we talk about clinical then to practice then we can say that this field uses extreme amount of energy does by using ecofriendly technology's which might help in sparing huge amount of energy which is wasted by using other gadgets.
2. Conserving water unnecessary water wastage can be avoided by putting the tap off. This practice should be inculcated not only by dentists but by every individual.
3. Reduce radiation by using digital radiography rather than using conventional radiography reduces the quantity of radiation and the quality of the Representation of radiograph will also be improved. If we compare the amount of manpower involved in traditional radiography as compared to the digital radiography, we can notice that switching to digital radiography is beneficial from many points of view for dentists, patients as well as the environment as no more harmful chemicals will be released in the atmosphere.
4. Reprocessing of many items present in a dental clinic which can be reused or recycle specially some of the paper waste. Such kind of waste help in reducing cost as well as help in reducing unnecessary wastage of resources.
5. Application of technology usage and technological advancement in terms of storing data or maintaining records on portal and not on paper is a beneficial way of maintaining records. By this way not only paper wastage is avoided but also all the records are safe and secure in a database associated with that dental practitioner. Also, there are less chances of contamination as paper



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could be a potent source of infection. As in the payment modes we have inculcated practice of implementing online payment methods hence in this scenario also making use of databases for storing patient's records are a beneficiary option.

6. Decrease in amount of pollution that occurs due to chemicals less amount of disposable items with the application of applying bio friendly items for usage less amount of waste is generated and also team sterilizers that are used help in reducing the ventilation required as an a chemical sterilization more ventilation is required for getting rid of those chemicals.
7. By using products which are more resembling to tooth color and less resembling to the other metals which are heavy as per the atomic and molecular weight and are not safe for use in dentistry.

## CONCLUSION

This implementation of using ecofriendly practice in dentistry is an emerging method to decrease impact of surrounding environment on practicing dentistry. This type of dentistry truly reduces the amount of extra waste that is generated and the type of extra toxicity that is prevalent in the environment because of such dentistry practices. In green dentistry there are innovations which come up and which are amalgamated to lead into a successful and an ecofriendly dental practice. With the help of such practices the productivity is also increased by multifold hence this is a good dental practice. With the implementation of such practices not only resources but time is also saved. With overall implementation of such measures, ultimately pollution is decreased in the environment. Even by using such products because of the cost reduction even the patients get benefitted as it involves fewer charges involved when they get their treatment done. Not only dentist but a combined initiative of every work professional towards implanting work ethics which involve an eco-friendly practice will be beneficial for the whole globe. So, we should make it a pledge to go green when it comes to dentistry and further this will help us in saving our mother earth.

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