ECO - Friendly Dentistry: A Reality

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ABSTRACT: Eco-friendly dentistry is a relatively new term and an emerging concept in dentistry. It is an approach that reduces the environmental impact of dental practice and provide dental care in an environmentally friendly way. The purpose of this review is to discuss various ways that a dentist can choose to make the office environmental friendly and conserve precious resources with all the options available today. Eco-friendly dentistry is quickly becoming the standard.

KEYWORDS: High- tech dentistry, Amalgam separator, Eco friendly, Toxic.

INTRODUCTION
Eco-friendly dentistry is an 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 wastes and by promoting the well being of all those in the clinical environment by conscious reduction of chemicals in breathable air. Dentistry is a profession dedicated to promoting and enhancing the health and well being. To accomplish these goals dentist uses a variety of materials and equipments. Unfortunately, some of the materials that are currently in use including heavy metal and biomedical waste present potential challenges to the environment.¹

CONCEPT OF ECO-FRIENDLY DENTISTRY
1. Reduces dental waste and pollution
2. Do high-tech dentistry
3. Saves water, energy and money

DENTAL WASTE AND POLLUTION
Following processes are responsible for most dental practice waste:
- Infection control methods includes disposable barriers and sterilization items and toxic disinfectant
- Placement and removal of mercury-containing dental material
- Conventional x-ray systems

INFECTION CONTROL
Dental office infection control and sterilization processes can be a major source of pollution and waste in the traditional dental practice. Chemicals used in infection control and sterilization processes in dental office can be quite dangerous. They can jeopardize employee health, contribute to poor office air quality, and can pollute our community's water stream. Non-toxic alternatives for infection control and sterilization have the same or greater effectiveness in getting the job done, while protecting the health and safety of dental practitioners, patients, and our neighbourhoods.

IN THE ECO-FRIENDLY PRACTICE
- Steam sterilization replaces chemical-based sterilization
- Toxic cold-sterilization methods are eliminated
- Eco-friendly disinfectants maintain a hospital-grade environment in the operatory

These eco-friendly options have the added benefit of eliminating that “dental chronic smell” that triggers “that dental office anxiety!”

ECO-FRIENDLY DENTAL CINICS
- Choose cloth lab coats
- Use re-usable cloth patient barriers
- Implement FDA-registered re-usable pouches and wraps for sterilization
- Reduce the use of disposable in all dental office processes
- Use a community’s existing recycling programme to separately recycle paper and plastic autoclave bags.
- Implement an eco-friendly sterilization program, which simultaneously eliminates the need for disposable autoclave wraps and disposable patient bibs.
- Consider using less harmful surface disinfectants in dental offices, such as tea tree oil and thyme.
- Reusable operating room cotton towels instead of disposable plastic or paper patient bibs.
- Reusable stainless steel high and low volume, surgical/endodontic suction tips as an alternative to disposable plastic.

DENTAL AMALGAM POLLUTION
Dental amalgam pollutes the environment in a variety of ways: waste water for dental clinic, human waste, mercury vapour. Various consideration should be part of any effort to end the use of mercury in dentistry. Dental clinic that removed
the amalgam filling need an amalgam separator the equipment keeps mercury containing filling material from entering our water supply. Alternative to silver amalgam as a filling material are glass ionomers, indirect restorative dental materials dental ceramic, gold alloys, composites etc.

CONVENTIONAL X-RAY POLLUTION
Conventional x-rays create trash and toxic chemical-waste that the dental office is left to dispose of. The chemical fixers and lead foils from x-ray processes have to go somewhere, which often means public sewer systems.

HEALTH RISKS OF X-RAY FIXER SOLUTIONS
Traditional x-ray fixers contain chemicals such as Ammonium Thioocyanate and Boric anhydride. These chemicals are known to be skin, eye and respiratory tract irritants, and hazardous if ingested or inhaled. They also may be toxic to blood, thyroid, kidneys and liver and repeated or prolonged exposure can produce target organ damage.

They are toxic to fish, and have shown to cause adverse reproductive and developmental effects in animals with repeated exposure. Boric anhydride has been shown to have neurological impacts such as personality and mood changes, mania and even seizures. The products of the degradation of these materials are shown to be as toxic as the original product. Another by-product of traditional x-rays is lead foils. In the environment, lead waste is held in the topsoil, where it can remain for as long as 2000 years. It is readily picked up by plants, and enters our food system. Lead is a deadly neurotoxin. In most cases, there is a 1:1 correlation between the eco-friendly and the high-tech choice.

TECHNIQUE EVOLUTION FOR WASTE REDUCTION
Digital technologies offer early diagnosis, preventive therapies, and education that serve the needs of wellness lifestyle patients committed to maintaining long-term wellness and seeking to avoid invasive or expensive procedures. Many high-tech cosmetic practices see a boost in new patients and practices success when they recognize the eco-friendly value of their high-tech investments.

More High-Tech, Eco-Friendly, Wellness-Based Dental Technologies:
- Oral Detoxification with Laser Hygiene Technologies
- Digital Oral Cancer Screening
- Digital Impressions
- Digital Patient Charting
- On-site Biomedical Waste Disposal Systems
- CAD/CAM Systems in office laboratory restorations which is convenient completion of lab-quality restorations in single appointment, comfort of digital impressions and reduces greenhouse gases produced from patient and staff travel for multiple appointments, and the shipping of impressions and final restorations, sometimes as far as overseas which is useful for the patient as well as the environment.
- Instead of old x-ray machines prefer digital imaging (x-rays) which has instant image availability, improved image quality, enhanced diagnostic efficacy, minimal radiation exposure and it also eliminates toxic x-ray fixer solutions and lead foils which is useful for the patient as well as the environment.
- Use liquid crystal display (LCD) instead of cathode ray tube (CRT) computer monitors.

SAVES WATER, ENERGY, AND MONEY
Eco-friendly dentistry conserves precious resources both natural and monetary.

WATER
Clean, fresh water is one of our most undervalued dental supplies. We are in the habit of accessing fresh, clean, drinkable water at the flip of a wrist. But that convenience is misleading. The worldwide water crises threatens international health and stability. Green dental practices implement water-saving initiatives from encouraging patients to turn off the water while they brush, to save hundreds of gallons of water every day by investing in a dry vacuum suction system.

ENERGY
Reducing our energy use means simple things like changing out light bulbs and turning off equipment when not in use. It also means examining the carbon footprint of the materials and supplies we use, and extending the life of our high-energy-input supplies.

MONEY
Eco-friendly dentistry lowers supply costs, integrates high-tech innovations, and makes efficient use of staff time, reducing the overhead and increasing productivity for a very high overhead business. Most green dentists choose to invest those cost savings into high-tech diagnostic and good health that seeks to avoid emergency treatment.

CONCLUSION
Reducing waste, changing patterns of consumption and limiting the amount of adverse chemicals entering the breathable air of dental office are achievable and realistic goals. Dentist should take a leading role in society by implementing “Eco-friendly” initiatives to lessen their impact on the environment.

REFERENCES

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