

Cognizance, Comprehension, and Implementation of Green Dentistry among Dental Students and Practitioners, Navi Mumbai, India

Zil Boricha¹, Charu Girotra², Siddharth Acharya³, Omkar Shetty⁴, Ruchita Bhosle⁵, Gaurav Tomar⁶

¹BDS, School of Dentistry, DY Patil Deemed to be University, Navi Mumbai, Maharashtra, India, ²Professor, Department of Oral and Maxillofacial Surgery, School of Dentistry, DY Patil Deemed to be University, Navi Mumbai, Maharashtra, India, ³Lecturer, Department of Public Health Dentistry, School of Dentistry, DY Patil Deemed to be University, Navi Mumbai, Maharashtra, India, ⁴Professor, Department of Prosthodontics Crowns and Bridges, School of Dentistry, DY Patil Deemed to be University, Navi Mumbai, Maharashtra, India, ⁵BDS, School of Dentistry, DY Patil Deemed to be University, Navi Mumbai, Maharashtra, India, ⁶PG Student, Department of Oral and Maxillofacial Surgery, School of Dentistry, DY Patil Deemed to be University, Navi Mumbai, Maharashtra, India

Abstract

Objectives: Green dentistry is evolving dental practice, including conservation of resources, reduction in water and energy usage and minimizing dental waste, and reducing pollution. Keeping in mind climate change issues and consistent demands and expectations of practicing sustainability, it is imperative to know knowledge and awareness of dental students and regarding green dentistry, and how much of it are they willing to implement in dental practices and to understand knowledge, awareness, and implementation of green dentistry in Navi Mumbai, India.

Materials and Methods: A survey questionnaire with dental practitioners and students enrolled in dental studies. Data were analyzed by Statistical Analysis Software Enterprise Guide.

Results: Half the participants were aware of the term "Green Dentistry," and few had minimal information on green dentistry. There was discord between knowledge and implementation of environment-friendly practices. Most participants cited a lack of awareness for non-implementation of environment-friendly practices.

Conclusion: Mass education and promotion of environment-friendly practices are necessary to reduce the impact of dentistry on the environment. Implementation of green dentistry in dental school curriculum and conducting seminars is recommended to improve awareness. Similar studies are recommended in different cities to enable comparison of perceptions and hindrances in practice of green dentistry.

Key words: Biomedical waste, Eco-friendly, Energy-saving equipment, Green dentistry

INTRODUCTION

In recent times, climate change movements have been at the forefront throughout the world. Carbon emissions, plastic-filled oceans, melting ice, rising sea levels, and frequent natural and manmade disasters are now seen as a major cause of concern for the planet.^[1] It is now deemed

vital for every individual on the planet to perform their duties while causing minimum damage to the environment by embracing environmentally friendly and sustainable practices. Climate change also causes direct impacts on the health of an individual. As the health of an individual suffers, extra burden is placed on health facilities and healthcare professionals to cater to the needs of the patients. A large amount of greenhouse gases emitted in the earth's atmosphere can be attributed to health care systems. As the needs of the growing population increase, the amount of emissions from healthcare settings also increases.

Hospitals and healthcare facilities use plenty resources for their day-to-day functioning. Similarly, dental services

Access this article online



www.ijss-sn.com

Month of Submission : 02-2021
Month of Peer Review : 03-2021
Month of Acceptance : 03-2021
Month of Publishing : 04-2021

Corresponding Author: Dr. Siddharth Acharya, Department of Public Health Dentistry, School of Dentistry, DY Patil Deemed to be University, Navi Mumbai, Maharashtra, India.

generate metallic waste, use excessive water, and electricity for their functioning.^[2] To mitigate these issues, it is observed that in certain developed countries like the United Kingdom, the National Health Service is responsible for delivering health care to the people and has undertaken the implementation of sustainable practices to reduce their carbon footprints by developing sustainability measures, setting targets for the coming years, initiating steering groups, and developing guidance papers by means of its Sustainable Development Unit.^[3] However, similar measures have not been observed specific to dentistry or dental practices. Despite promotion of environmentally friendly practices, uptake of the same has not been high in the field of dentistry. Dentistry is a highly energy and resource-intensive with significant environmental impact.^[3] Dental professionals aim to endorse and enhance the oral health and well-being of their patients and to accomplish such goals, dentists use a variety of materials and instruments. Unfortunately, dentistry has a large impact on the environment by the pollution generated by general office waste, use of amalgam restorative materials, radiographic chemicals and lead foils, disinfectant solutions used, source of energy used, and use of plastic and paper.^[4] Even though the waste produced and resources utilized by an average dentist might not be extensive, it is still harmful to the environment, and in the long-term, maybe more damaging. Hence, it is imperative for dentists to move toward environmentally acceptable and long-term sustainable practices. This can be possible by embracing green dentistry.^[5]

Garla in 2012 defines green dentistry or eco-friendly dentistry as “a practice that reduces waste and pollution, saves energy, and money, incorporates high tech innovations, and is wellness-based.”^[6] Green dentistry or eco-friendly dentistry is considered as an upcoming dental practice which will involve conservation of resources, reduction in water and energy usage, and minimization of dental waste produced and reducing pollution.^[7] It is an innovative way of dental practice which based on waste reduction, energy conservation, and pollution prevention. Chopra and Raju in 2017 explained green dentistry as an encompassed dedication toward sustainability, prevention, and precautions to protect the environment.^[7] Green dentistry is still an evolving concept in most countries, and more so in developing countries like India; hence, it is vital to know how much knowledge and awareness do dental students and practitioners have about green dentistry and how much of it are they willing to implement in their dental practices. The aim of this study is to understand the knowledge, awareness, and implementation of green dentistry by dental students and dental practitioners in Navi Mumbai, India.

MATERIALS AND METHODS

Participants

A cross-sectional study was conducted in 2019 to determine the knowledge, awareness, and implementation of green dentistry. A survey was conducted in 4 Colleges in Navi Mumbai, involving 500 participants, of which 200 were dental practitioners and 300 were dental students. Among the 300 students, 190 were undergraduate interns (studying Bachelor of Dental Surgery [B.D.S]) and 110 were post-graduate students (studying Master of Dental Surgery [M.D.S]). All the participants were enrolled or working in different dental colleges, hospitals, or clinics in Mumbai and/ or Navi Mumbai.

Ethical Considerations

The study was approved by D.Y. Patil University, School of Dentistry Ethics Review (Number: FRC/2018/OS/10).

Data Collection

An 18 points and 17 points close-ended, self-structured questionnaire (in the English language) was designed for dental practitioners and dental students, respectively, and was checked for content and construct validity. The questionnaire included questions on knowledge and awareness about green dentistry practices and the willingness of the participants to embrace green dentistry or acquire more knowledge about the same. It was pilot-tested on 10 participants and was evaluated for uniformity of interpretation. Inter-rater reliability was checked using Pearson's correlation coefficient formula during the pilot study.

Necessary approvals and permissions were taken from the deans of the four respective colleges. The close-ended, self-administered questionnaire was given to the participants by the investigator by approaching them individually. The questionnaire was filled in the presence of the investigator to avoid any misrepresentation of factors from the participant's side. The investigator was available to answer any questions that the participants had about the questionnaire.

Analysis

The data were analyzed by means of quantitative data analysis. The data were coded and analyzed by Statistical Analysis Software Enterprise Guide (SAS), for example, Version 9.4 and comparisons were done using the Chi-square test. The analyses included coding, comparing, and drawing inferences.

RESULTS

The survey was conducted among 500 participants, of which 200 (40%) were dental practitioners and 300 (60%)

were dental students. Among the 200 dental practitioners, 128 (64.32%) were B.D.S and 72 (35.68%) were M.D.S students. Among the 300 students, 190 (63.33%) were undergraduate interns and 110 (36.67%) were post-graduate students. Response rate is 100%.

As many as 58.79% of dental practitioners, 57.69% of interns, and 54.29% of post-graduate students have heard the term green dentistry. 83.59% of dental practitioners, 66.11% of interns, and 68.32% of post-graduates understood the actual meaning of the term green dentistry which it reduces waste and pollution, promotes wellness, and saves time, money, and energy.

When asked about the ideal type of dental office, only 42.71% of dental practitioners, 60.53% of interns, and 47.27% of post-graduate students thought that having your clinic in a concrete building with a double-glazed glass window is ideal. About 15.58% of dental practitioners, 10% of interns, and 6.36% of post-graduate students thought that linoleum flooring is ideal for the dental office. Ultra-low volatile organic compound (VOC) paint is ideal for dental office was known by 35.18% of dental practitioners, 54.21% of interns, and 52.73% of post-graduate students.

Chi-square test was performed for the following three questions to compare the knowledge about green building among the participants and the results are as follows:

said that they had a biomedical waste segregation plan at their place of practice, only the participants mentioned in Table 4 could correctly identify the right colored bag for a particular waste product. The colour coding of the waste disposal bags is presented in Table 5.

When asked about methods of energy conservation methods, use of light-emitting diode (LED) lights received the highest responses from both dental practitioners and students [Figures 1 and 2]. Students were more drawn toward renewable sources of energy, as opposed to practitioners, who favored energy saver appliances.

When asked about considerations of any wellness-based modality systems, dental students were keen on considering many of the wellness-based modalities such as live plants, computer-aided design and computer-aided manufacturing (CAD-CAM) systems, digital screenings, laser diagnostics,

Questions asked in the survey	Chi-square	Probability
What is the ideal type of dental office?	7.33	0.119
What type of flooring is ideal for a dental office?	18.1	0.053
What should be the paint used on internal walls of your dental office?	25.4	0.001

Table 1: 3 questions in the questionnaire for which chi-square test was performed

Green dentistry focuses on waste reduction, energy conservation, and pollution prevention. To reduce waste, participants were asked if they would use the reusable substitutes for the products mentioned in Table 2, which shows us the number of participants who said yes to bring the change.

Participants were asked if they use the methods mentioned in Table 3 to reduce waste, conserve energy, and reduce pollution. Digital radiography was used by 64.10% of dental practitioners, 94.74% of interns, and 90.74% of post-graduate students, making it the widely used method of pollution reduction in dental offices. For energy conservation, 73.87% of dental practitioners, 76.34% of interns, and 78.85% of post-graduate students unplug all the electrical appliances after use.

Participants were also asked about bio-medical waste management in their place of practice. 54.77% of dental practitioners, 84.95% of interns, and 72.64% of post-graduate students said that they had bio-medical waste segregation plan, while of others who said no, 87.39% of dental practitioners, 76.67% of interns, and 81.82% of post-graduate students said that it was collected by authorized clinical/hospital waste collection. Of the participants who

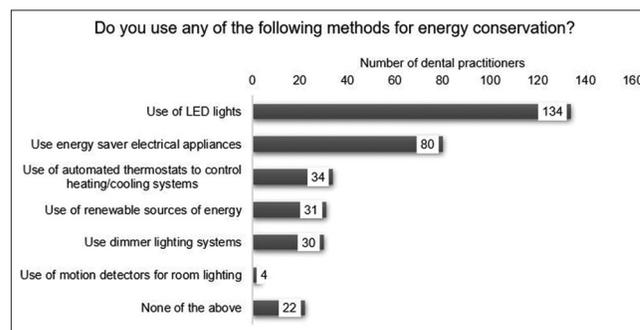


Figure 1: Gives the distribution of energy conservation methods preferred by dental practitioners

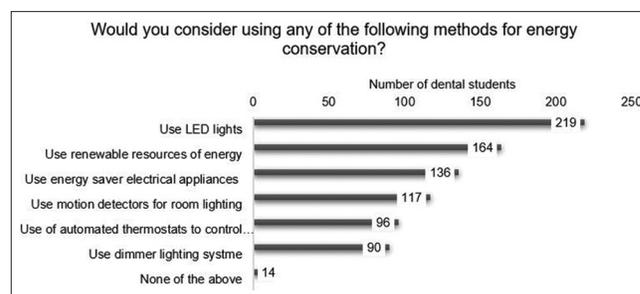


Figure 2: Gives the distribution of energy conservation methods preferred by dental students (interns and post-graduate students)

Environment friendly substitutes to every-day dental products	Dental practitioners	Interns	Post graduate students
A. Sterilized Cloth Masks over disposable masks	35.18%	44.21%	39.09%
B. Metal suction tips over disposable suction tips	53.27%	36.84%	45.45%
C. Sterilized cloth drapes	80.00%	84.74%	91.82%
D. Reusable sterilized cloth aprons/lab coats over disposable aprons	79.40%	82.11%	91.82%
E. Steel /autoclave-able drinking cups over plastic drinking cups	46.23%	55.26%	51.82%
F. Metal cartridges over disposable syringes	55.78%	43.16%	45.45%
G. Cloth instrument bags over disposable ones	59.30%	76.32%	83.64%
H. Sterilized Protective eye wear	93.47%	91.58%	91.82%
I. Sterilized Instruments, trays and film holding device that can be reused	88.45%	96.84%	100%
J. Laundered cloth towels over napkins	86.43%	66.32%	69.09%
K. Steam sterilization over cold sterilization	89.45%	93.16%	93.64%

Table 2: The first column in Table 2 represents the environment friendly substitutes to every-day dental products. The rest of the columns includes the percentage of participants that prefer these substitutes over conventional alternatives.

Methods used in dental offices to reduce waste/ conserve energy/ reduce pollution	Dental practitioners	Interns	Post graduate students
Digital Radiography	64.10%	94.74%	90.74%
Waterless/ dry vacuum system	28.27%	38.04%	56.73%
Water faucet sensors	27.51%	61.96%	62.62%
Waterless hand sanitizers	34.87%	50%	55.56%
Computer based patient records	59.26%	7.61%	7.41%
LCD Monitor	74.87%	84.62%	79.44%

Table 3: Table 3 gives the percent distribution of methods used in dental offices to reduce waste/ conserve energy/ reduce pollution by dental practitioners, interns and post graduate students.

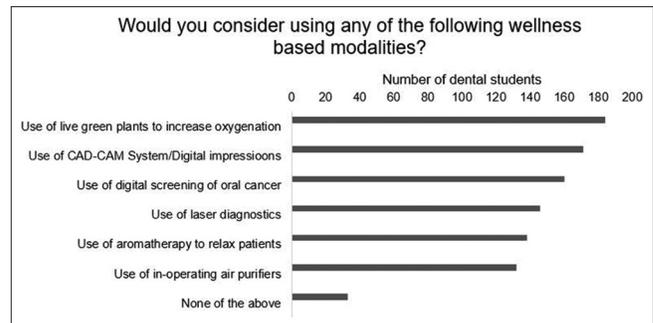


Figure 3: Gives the distribution of wellness-based modalities preferred by dental students (interns and post-graduate students)

Only 22.45% of dental practitioners, 52.75% of interns, and 40.38% of post-graduate students said they recycled the lead foils used in dental radiography. 14.07% of dental practitioners, 36.31% of interns, and 35.42% of post-graduate students said that they sent X-ray fixer solution to silver recovery system.

and others [Figure 3]. As opposed to students, most dental practitioners (85) did not consider using any of the wellness-based modality systems [Figure 4].

Amalgam management is one of the biggest concerns in dental practice, when given options for disposal of

Table 4 gives the percent distribution of the number of the participants who correctly identified the correct bags for different types of waste disposals.

Type of waste	Dental practitioners	Interns	Post graduate students	Chi-square and probability (p)
Blood waste in yellow bag	31.87%	20.47%	15%	32.8 p=0.000
Blood soaked cotton in yellow bag	45.05%	25.20%	15.79%	40.0 p=0.000
Gloves in red bag	35.29%	30.08%	30.64%	7.61 p=0.268
Discarded medicines in yellow bag	12.99%	42.15%	32.76%	32.1 p=0.000
Plastic bottles in red bag	26.97%	23.14%	19.30%	19.7 p=0.003
Broken glass article in blue bag	77.53%	28.80%	33.33%	65.1 p=0.000
Extracted teeth in white bag	14.12%	25.21%	26.32%	13.3 p=0.039
Catheter in red bag	54.55%	31.40%	23.64%	33.7 p=0.000
Syringes, IVs in red bag	53.76%	32.48%	38.60%	31.7 p=0.000
Sharps (blades, scalpels) in white bag	17.58%	24.79%	21.05%	29.6 p=0.000
Needles without syringes in white bag	28.92%	32.52%	29.82%	11.3 p=0.081

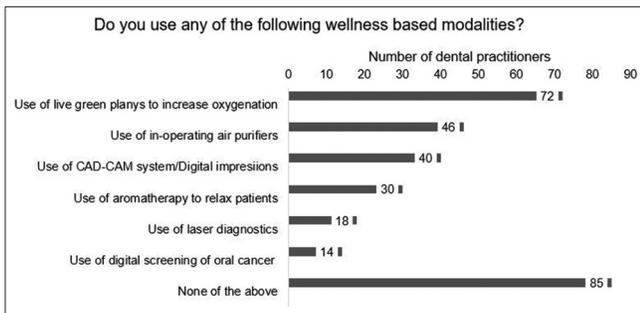


Figure 4: Gives the distribution of well-ness-based modalities preferred by dental practitioners

amalgam, 45.20% of dental practitioners, 28.26% of interns, and 21.36% of post-graduates use alternative to amalgam fillings. To transit impression or casts to and from the lab, 76.38% of dental practitioners, 65.38% of interns, and 65.05% of post-graduate students still use plastic bags.

91.19% of dental practitioners, 87.85% of interns, and 92.38% of post-graduate students have not attended any seminars related to green dentistry. 90.48% of dental practitioners, 89.35% of interns, and 86.41% of

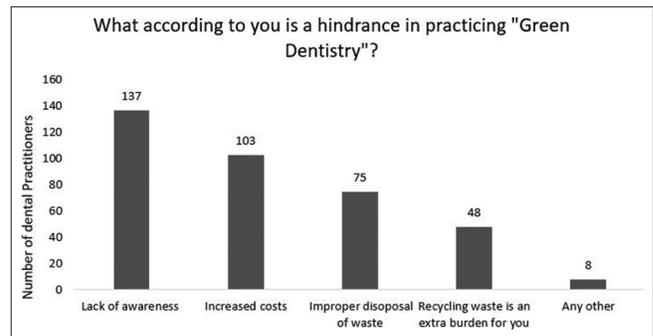


Figure 5: Represents hindrance faced by dental practitioners in the implementation of green dentistry

post-graduate students would like to attend seminars and workshops related to green dentistry. 98.99% of dental practitioners, 98.91% of interns, and 98.10% of post-graduate students would like to implement green dentistry in their practice to make earth a better place to live.

The following graph represents the hindrance faced by dental practitioners in practicing green dentistry [Figure 5].

Category	Type of waste
1. YELLOW	Human/animal anatomical waste Soiled Waste Expired/discarded medicine Chemical waste and Chemical liquid waste Discarded linen, mattresses, beddings contaminated with blood and body fluid Microbiology, biotechnology and clinical laboratory waste
2. RED	Contaminated waste (recyclable) such as tubing, bottles, intravenous tubes and gloves
3. WHITE OR TRANSLUCENT	Waste sharps such as blades, scalpels and needles
4. BLUE	Glassware (like vials) and metallic body implants

Table 5 shows color coding of waste disposal bags

DISCUSSION

The purpose of this survey is to understand the knowledge, awareness, and implementation of green dentistry in the dental practice of dental practitioners and dental students. According to Eco-Dentistry Association,^[5] the prime worth of switching to eco-friendly dentistry is:

1. It is high-tech
2. It reduces waste and pollution
3. It saves time, energy, and money
4. It promotes wellness.

Implementation of green dentistry protocols in a dental setting can be initiated by choosing your office in a green building. Our results reveal a lack of knowledge about green clinics among the participants. Green building is environmentally responsible and resource-efficient through its life cycle: From its design, construction, and operation to maintenance, renovation, and demolition.^[8] A green dental office may cost more in up front but, in the long run, will save money through lower operating costs over the life. Simple ways to go green are as follows;

1. Use of concrete instead of brick is considered ideal as it improved thermal efficiency reduced heat and cooling load
2. Use of double wall glass in window so as to reduce direct heat gain and glare while maximizing the sunlight entering your rooms
3. Use of non-toxic eco-friendly paints (ultralow VOC paints) as they do not produce toxic fumes
4. Use of linoleum flooring is a more eco-friendly choice.^[9]

Participants in the survey revealed that they would prefer using reusable items in their dental practice for the reduction of waste. However, our results reveal low use of cloth mask, metal suction tips, steel/autoclavable drinking cups, and metal cartridges, most likely due to fear of disease transmission. However, use of reusable materials in a dental setting is encouraged, with the help of additional

attention from the auxiliary staff to maintain the standard protocol of disinfection and ensure complete sterilization of materials to prevent disease transmission.

Participants were well aware of the need of energy conservation and hence most of them unplug all of the electrical appliances after use. A study reveals if electrical appliances are unplugged, they save 5–10% on your electricity bill.^[10] More conservation of energy could be done using the following methods:

1. Use of LED lights, these lights last for several years, thereby reducing waste production and also use 70% less electricity in comparison to halogen light^[11]
2. Use of renewable resources of energy like solar energy, electricity produced from windmill^[7]
3. Use of automated thermostats which run on different temperatures at different times of day and should be adjusted according to outside temperature^[12]
4. Use of motion detectors for room lighting reduces the use of electricity when the room is empty^[2]
5. Use of controlled dimmer lighting systems^[13]
6. Up to 1/3rd of energy, cost is preserved using energy saver electrical appliance which is energy star rated.^[9]

Going digital in your dental practice is the new technique evolution for waste reduction,^[8] this can be done using:

1. Laser diagnostic tools which help to detect dental caries more efficiently than naked eyes^[14]
2. Use of CAD-CAM Systems/Digital impressions which is more efficient than material-based impression and reduces waste by not producing gypsum cast and no use of alginate or rubber-based impression materials. It is more convenient for dental laboratories as they do not have to travel to your clinics which reduces emission of greenhouse gases and reduces the use of plastic and paper
3. Digital screening of oral cancer reduces the production of hazardous tissue waste and frequent travel expenses
4. Use of intra-oral screening cameras and radiovisiography imaging techniques for dental radiographs.

Using wellness-based modalities not only makes your clinic appealing to your patients but also reduces aerosols produced during dental procedures. Use of aromatherapy helps calming patients naturally. Use of live green plants helps to improve the quality of oxygen in your clinics. Use of in-operating air purifiers removes aerosols produced during dental procedures from the air.^[5] Participants had high knowledge about energy conservation as most of them preferred use of digital radiography and liquid crystal display monitors, but when asked about paper waste management, we received low responses for switching to computer-based patient records. This could be because the participants may have to appoint an additional staff/train

their assistant which could be an extra burden for them. Participants showed low response for the use waterless/dry vacuum system, water faucet sensor, and waterless hand sanitizers to conserve water. These systems could be used by fewer participants because of expensive costs in comparison to their conventional alternatives.

The term biomedical waste has been defined as “any waste that is generated during the diagnosis, treatment, or immunization of human beings or animals, or in the research activities pertaining to or in the production or testing of biological and includes categories mentioned in Schedule I of the Biomedical Waste (Management and Handling) rules 1998.”^[15] This makes it mandatory for dental clinics to segregate, disinfect, and dispose of their waste in the proper manner. There may be an increased risk of infections in patients and dental staff due to poor waste management. The best disposal options are to prevent or minimize the disposal of toxic substances from dental clinics into the environment. Biodegradable waste segregation plan was adopted by about 70% of participants, and they used yellow, red, blue, or white bags to segregate the waste produced. The remaining 30% of our participants disposed of their biomedical waste by handling it to authorize clinical/hospital waste collection or to house-to-house waste collection. Unfortunately, participants revealed a lack of knowledge when asked to segregate a few waste products into their respective bags. The plastic bags which are used for waste disposal are special non-chlorinated bags which are incinerable and are color-coded according to the waste to be disposed in them.^[15]

Impression compound, agar, dental waxes, green stick compound, impression pastes, and shellac baseplates should be kept in a “yellow plastic bag” then sent for either incineration or deep burial.^[15] Rubber base impression material, investment material, pumice, acrylic, metal dust, alginate, old models, and casts, old acrylic dentures and teeth kept in a “black plastic bag” and dispose of in municipal dump.^[15]

Dental amalgam particles have sources of mercury, which is known to be neurotoxic and nephrotoxic. Our results revealed a low level of amalgam management strategies. Ideal method of reducing amalgam waste is using alternatives to silver amalgam such as composite, glass ionomer, and indirect restorative materials such as gold, ceramic, and porcelain. If that is not possible, then always use pre-encapsulated amalgam instead of manual manipulation;^[12] after condensation, scrap should be collected and stored in air tight jar in water and does not dispose amalgam in regular trash; instead of it dispose it as hazardous waste/ send it to a recycler. Another option is to install amalgam separator that complies with the

International Organization for Standardization (ISO) 11143.^[8] Extracted teeth without amalgam restorations can be placed in white/translucent bag with sharps, which can then be sterilized, but it is preferred to recycle all amalgam found on extracted teeth.^[6] Teeth with amalgam should be managed with protocols followed to dispose amalgam waste which is described above X-ray films used in conventional radiography produces waste in the form of lead foils which cannot be disposed of in biomedical waste as they are hazardous and need to be recycled for their scrap metal content.^[9] Lead waste is held in topsoil, where it can persist for 2000 years which is rapidly picked up by plants and enters the food system.^[8] Participants showed low response to correct disposal of lead foil and fixer solution; this may have occurred due to lack of knowledge about the same. Similarly, the fixer solution should be sent to silver recovery system as it contains chemicals such as aluminum thiocyanate and boric anhydride which can irritate skin, eyes, and respiratory tract, and prolonged exposure may be toxic for blood, thyroid, liver, and kidney, may lead to target organ failure.^[8]

Plastic, once found to be having a wide number of advantages, is now a serious threat to the environment and health due to its non-biodegradable nature. Maximum participants used plastic bags for transit of impressions/cast to and from laboratory. Use of alternative to plastic bags in the form of cloth bag or steel containers is the need of hour.

Our results reveal that more than 90% of participants wish to attend lectures/seminars/workshops on green dentistry and implement it into their practice and make earth a better place to live. Lack of awareness was the most chosen option when dental practitioners were asked about the obstacles they face while implementing green dentistry; other hindrances in implementation of green dentistry were increased costs, improper waste disposal, considering recycling waste as an extra burden, lack of trained staff, and preferring convenience over responsibility toward the environment.

Amalgam, plastic, radiographic chemicals, and lead foils are waste material from dental settings, which lead to land and water pollution. Dentists can limit the burden on the environment by implementing the “Four R’s of Going Green,” namely, “Re-think, Reduce, Reuse, and Recycle.”^[4]

Re-think

We need to re-think the choices we make right from choosing our dental office to the materials and appliances that are to be used in our practice and the ways we will perform our dental procedures so that the choices we make will prove to be more environmental friendly and reduce the burden on earth.

Reduce

We need to reduce the use diminishing resources that are available to us such as water and electricity and make use of free resources like sunlight.

Reuse

Make use of materials/products that could be used more than once, this will help us to produce less waste on daily basis.

Recycle

Make use of materials that could be recycled; by doing this, we are using the material for a longer during before throwing it away in the waste.

CONCLUSION

This study has revealed the knowledge, comprehension, and implementation of green dentistry among dentists and students in the city of Navi Mumbai. We find that there is not enough awareness about green dentistry. There is also an apparent visible gap between knowledge and implementation. In addition, there is widespread misinformation about certain aspects of green transformations, for example, waste disposals. From the findings and discussions, we can conclude that there is an important need to create awareness among dental practitioners and students about the effects of dentistry on the environment and ideal implementation of green dentistry to mitigate these issues.

Recommendations

The current study faces limitations about the type of study design. We did not conduct interviews with participants, which would have provided us with more information on ways to support dentists for a green transition. The study was also concentrated in just one city and few institutions. However, despite these limitations, the study still provides insights into concepts of green dentistry, which are largely unexplored in developing countries like India. A similar study is recommended in different cities and towns of India to enable comparison of knowledge, perceptions, and hindrances, if any, in the practice of green dentistry. To increase knowledge about green dentistry among dentists,

the Dental Council of India could include the concept of green dentistry in the existing syllabus. Conduction of widespread seminars regarding the management of finances while starting a green clinic can be delivered to fresh graduates, as well as seasoned practitioners, who would most likely implement it in the construction of their dental offices. Research work on the concept of green dentistry should be undertaken to provide further information on green dentistry practices; grants can also be provided for the same to encourage participation.

REFERENCES

1. Climate Change: How Do We Know? Climate NASA; 2020. p. 1. Available from: <https://www.climate.nasa.gov/evidence>. [Last accessed on 2020 Nov 20].
2. 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.
3. Mulimani P. Green dentistry: The art and science of sustainable practice. *Br Dent J* 2017;222:954-61.
4. Al-Qarni M, Shakeela NV, Alamri MA, Alshaikh YA. Awareness of eco-friendly dentistry among dental faculty and students of King Khalid University, Saudi Arabia. *J Clin Diagn Res* 2016;10:ZC75-8.
5. Mohelay N, Deolia SG, Jagyasi D, Lakhwani R, Sen S, Chapekar J. Eco-friendly dentistry: A green Business with Teeth. *Int J Oral Health Med Res* 2016;3:66-70.
6. Kumar GB. Green dentistry; ecofriendly dentistry: Beneficial for patients, beneficial for the environment. *Ann Essences Dent* 2012;4:72-4.
7. Chopra A, Raju K. Green dentistry: Practices and perceived barriers among dental practitioners of Chandigarh, Panchkula, and Mohali (Tricity), India. *J Indian Assoc Public Health Dent* 2017;15:53-6.
8. Karthika B, Sridhar T, Pavani M, Devi CR, Kanimozhiy S, Priya A. Bio-hazards in dentistry. *Indian J Hosp Infect* 2019;1:54-9.
9. Chopra A, Gupta N, Rao NC, Vashisth S. Eco-dentistry: The environment-friendly dentistry. *Saudi J Health Sci* 2014;3:61-5.
10. Brindle B. How Much Can You Save by Unplugging Appliances? 2011. p. 1-3. Available from: <https://www.howstuffworks.com>. [Last accessed on 2020 Nov 20].
11. Rathakrishnan M, Priyadarhini A. Green dentistry: The future. *J Int Clin Dent Res Org* 2017;9:59-61.
12. Al Shatrat SM, Shuman D, Darby ML, Jeng HA. Jordanian dentists' knowledge and implementation of eco-friendly dental office strategies. *Int Dent J* 2013;63:161-8.
13. 80 Ways to Make Your Dental Practice Green, ADA Center for Professional Success; 2018.
14. Bader JD, Shugars DA. A systematic review of the performance of a laser fluorescence device for detecting caries. *J Am Dent Assoc* 2004;135:1413-26.
15. Arora S, Mittal S, Dogra V. Eco-friendly dentistry: Need of future. An overview. *J Dent Allied Sci* 2017;6:22-7.
16. Thomas MV, Jarboe G, Frazer RQ. Regulatory compliance in the dental office. *Dent Clin North Am* 2008;52:629-39.

How to cite this article: Boricha Z, Girotra C, Acharya S, Shetty O, Bhosle R, Tomar G. Cognizance, Comprehension, and Implementation of Green Dentistry among Dental Students and Practitioners, Navi Mumbai, India. *Int J Sci Stud* 2021;9(1):155-162.

Source of Support: Nil, **Conflicts of Interest:** None declared.