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Current eco friendly dentistry to enhance environmental sustainability in Taiwan

The aim of dental health care is to enhance human oral health and well-being. However, the diversity of consumables and instruments are used up in daily dental treatment. Dentistry is recognized as the highly energy and resource consumption health care industry which could significantly impact on the environmental sustainability. Eco dentistry association has defined green dentistry as "a high tech approach that reduces the environmental impact of dental practices and encompasses a service model for dentistry that supports and maintains wellness" in 2013 (http://www.ecodentistry.org? about green dentistry). Green dentistry or eco friendly dentistry is based on 4R model of rethink, reduce, re-use, and recycle to integrate dental practices and environmental conservation.[1]

Traditionally, waste reduction, energy conservation, and pollution prevention are the important issues to achieve eco friendly dentistry. Besides, the use of gas water separator in handpiece has been conducted in Department of Dentistry, Chung Shan Medical University Hospital (CSMUH), Taichung, Taiwan, since early 1990. This device can prevent water contamination from dental professional team and air borne bioaerosol cross transmission into working environment. Dental amalgam is a potential source of mercury exposure into living environment. From the analysis of Taiwanese National Health Insurance Research Database, the decreased trends of using dental amalgam filling for decayed teeth was reported during past 17 years.[2] This has made a great contribution to enhance environmental sustainability in dentistry. In Taiwan, the Department of Medical Affairs, Ministry of Health and Welfare has legislated to regulate the medical waste removal and reuse (https://dep.mohw.gov.tw/DOMA/cp-2708-47031-106.html). Taiwan government has abided by the global trends to enhance environmental sustainability, especial in the field of medical waste management.

From our opinions, the implementation of artificial intelligence or digitalized in dentistry could effectively enhance environmental sustainability.[3,4] For example, Department of Dentistry, CSMUH has conducted electronic patient record format and digital imaging system to achieve paperless environment and minimize the radiation damage, respectively. The implementation of virtual reality dental simulators for dental interns and novice dentists learning and training may also move towards eco friendly environment. These equipments could reduce the consumption of plastic teeth and fine suspended particles generation from tooth preparation. In addition, digital impression with intraoral scanner could reduce the consumption of impression materials and plaster. Moreover, National Health Insurance Administration has also approved the use of information technology system for improve public communication.[5] The "NHI MediCloud System" was established to assist health care providers in obtaining patients' medication records. This policy could not only minimize the carbon footprint, but also decrease the global warming.

Taken together, eco friendly dentistry is on the way in Taiwan. However, the endpoint "zero dentistry" is still a long way to go. Further research focused on education, protocol, policy, and infrastructure changes to facilitate the environmental sustainability are warranted.

Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

References

1. Pockrass F, Pockrass I. The four "R's" of eco-friendly dentistry. *Am Dent Hyg Assoc* 2008;22:18–21.
2. Yang LC, Liu FH, Su NY, Wang YH, Yang PY, Chang YC. Decreased trends of using dental amalgam filling for decayed teeth in Taiwan from 1997 to 2013. *J Dent Sci* 2023;18:400–6.
3. Hsu LP, Huang YK, Chang YC. The implementation of artificial intelligence in dentistry could enhance environmental sustainability. *J Dent Sci* 2022;17:1081–2.

https://doi.org/10.1016/j.jds.2023.07.004

4. Hsu MH, Yang HW, Chang YC. Perspectives on the implementation of haptic virtual reality simulator into dental curriculum. *J Dent Sci* 2022;17:1443–4.
5. Lee PC, Wang TH, Tsai TY. Using IT system to improve public communication in the post-epidemic era. *J Formos Med Assoc* 2021;120:1809–10.

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