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Editorial

Nanoresearch in prosthetic dentistry

The field of nanotechnology and dental research in this division is the fast growing activity over the past few decades. These developments have increased the applications of nanoparticles in prosthetic dentistry.

Nanomaterials have been studied in many products such as drug delivery, impression materials, restorative materials, dental implants, sensors, dental devices, and a widespread nanoparticles' research has been done on various aspects of prosthetic dentistry. In dental materials, the nanoparticles are widely used in denture base materials, ceramics, implants, luting cements, and impression materials to enhance the properties. Extensive research evolved on different nanomaterials such as silver, gold, titanium, bioglass, carbon, polymers, and zirconia. Promising results have been obtained, and few practical improvements were achieved with the developments. Majority of the nanostudies are limited to denture base materials and ceramics. Wider studies are required in other components of nanoresearch to obtain the advantages of nanomaterials and the technology.[1]

The studies on nonmaterial do not discuss the type, size, significance of nanomaterials, method of incorporation, mode of study design, and methodology of obtaining these materials–apart from commercial prefabricated products. It is essential in describing these details to provide a wider acceptance, to improve research impact, and to obtain consistency in the results. Dental nanomaterial research is more of *in vitro* nature. The studies have to advance to the next phase of research. The clinical trials can support the outcome and productivity of these studied materials. The clinical trials are required to support the validity of nanomaterials and technology in prosthetic dentistry.

The literature quotes on many concentrations and sizes of nanoparticles. It is mandatory that an optimization method should be followed to determine the concentration of nanoparticles for mechanical, physical, and biological effectiveness. Among the considerations, majority of studies lack or do not consider the biological optimization.[2] The effectiveness of the particles is listed without mentioning the toxicology. The higher concentration of nanoparticles can raise serious health hazards. The dental research is lacking in this dimension of toxicology studies. High-priority research in this dimension is essential since several deleterious reports on the toxicological properties of the nanoparticles were reported.

An understanding of the risks for toxicity and health effects of the nanoparticles will aid in future development and research exploitation on a variety of nanomaterials. It is of a paramount importance that nanoresearch in prosthodontics must be closely evaluated in biological dimension. The primary and secondary research in nanodentistry on both advantages and disadvantages can provide useful data to support the development of nanotechnology and nanoresearch in prosthetic dentistry. The research dimension should also advance toward diagnosis, prosthesis, and technology.

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